ENGINEERING NEWS-RECORD

Why quit when it's cold? Canadians don't p. 23

A McGRAW HILL PUBLICATION

E B POWER GS
UNIVERSITY MICROFILMS I
313 N 1 ST
ANN ARBOR MICH

In Bay Village, Ohio—Cuyahoga County Engineers combat corrosion with over 37 tons of wrought iron plate for 48-inch sewage line

Corrosive threat plus inaccessible location added up to Wrought Iron for 48" O.D. sewage line

There was no question about the corrosion factors involved in the sewage line planned to serve Bay Village, Ohio. Compounding the problem was an almost inaccessible location that would make repair and maintenance difficult and expensive. And added to these considerations was the need for a material with sufficient structural strength to permit a 60-foot span between two trusses on either side of the valley the line had to cross. Cuyahoga County Sanitary Engineers, under the direction of Mr. John Puzenski, answered all these requirements with wrought iron. More than 37 tons of ½-inch wrought iron plate was fabricated into 48-inch diameter pipe and installed in approximately 270 feet of the sewage system.

Morgan Steel Products, Inc., Cleveland, Ohio, handled the fabrication. Installation work was done by The Utilities Construction Company, Cleveland, Ohio.

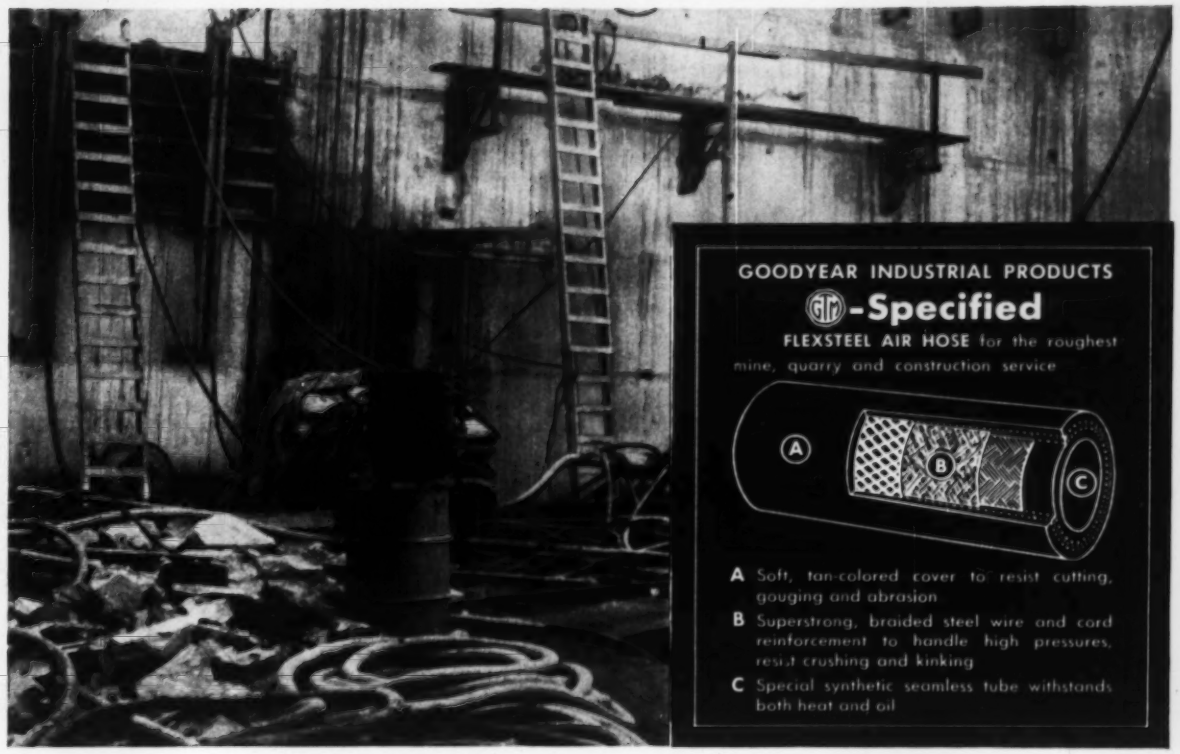
Our bulletin, *Wrought Iron for Sewage Treatment and Disposal Installations*, gives complete details on wrought iron's ability to last longer, at lower cost per year. Write for your copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Division Offices in Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. International Division: New York, N. Y.

Available in Canada and throughout the world

BYERS *Wrought Iron Tubular and Hot Rolled Products*

ALSO ELECTRIC FURNACE QUALITY STEEL PRODUCTS


GOODYEAR INDUSTRIAL PRODUCTS
GTM-Specified
FLEXSTEEL AIR HOSE for the roughest mine, quarry and construction service
A
B
C
A Soft, tan-colored cover to resist cutting, gouging and abrasion
B Superstrong, braided steel wire and cord reinforcement to handle high pressures, resist crushing and kinking
C Special synthetic seamless tube withstands both heat and oil

Best hose by a dam-site

HAMMERING through mountains of solid rock—drilling thousands of blast holes—forcing grout into countless fissures! They're all big and vital jobs on the gigantic St. Lawrence Seaway project.

So it's little wonder you'll find miles of FLEXSTEEL Hose there—feeding air, water and other materials to acres of high-pressure equipment. Contractors know this hose can take it: the dragging over jagged rocks, the stretching and straining, the rough, hurried handling.

You see, it's specified by the G.T.M.—Goodyear Technical Man—for murderous conditions that would soon wreck ordinary hose. It has a special heat- and oil-resistant tube. There's a cover that defies impact and abrasion. And it's muscled with super-strong braided steel wire. So it *lasts longer—costs less* to use.

Yet, with all that ruggedness, it's relatively light in weight—amazingly flexible. That makes it far easier to move from spot to spot—to maneuver in close quarters. And it means less strain on the men. Jobs are bound to move faster.

FLEXSTEEL Hose for *your* next job? Just contact the G.T.M. You can reach him through your Goodyear Distributor—or by writing:

Goodyear, Industrial Products Division,
Akron 16, Ohio

FLEXSTEEL HOSE by

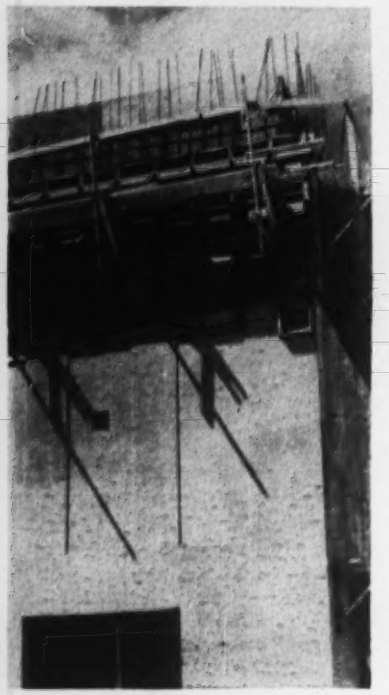
GOODYEAR

THE GREATEST NAME IN RUBBER

Flexsteel—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

Symons FIELD REPORT...



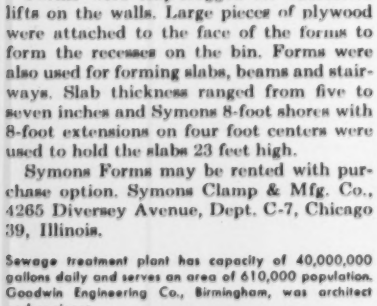
Walls, Slabs, Beams and Stairways Formed with SYMONS FORMS

8,500 square feet of Symons Forms with steel cross members, 200 column clamps and 520 shores were used by Sullivan Long and Hagerty, Birmingham, Alabama, for construction of the new $6,000,000 Jefferson County (Birmingham), Alabama, sewage treatment plant, vacuum filtration and flash drying building, and six digester tanks. The bin section of the plant is 60 feet high.

Forms were leap-frogged for successive lifts on the walls. Large pieces of plywood were attached to the face of the forms to form the recesses on the bin. Forms were also used for forming slabs, beams and stairways. Slab thickness ranged from five to seven inches and Symons 8-foot shores with 8-foot extensions on four foot centers were used to hold the slabs 23 feet high.

Symons Forms may be rented with purchase option. Symons Clamp & Mfg. Co., 4265 Diversey Avenue, Dept. C-7, Chicago 39, Illinois.

Sewage treatment plant has capacity of 40,000,000 gallons daily and serves an area of 610,000 population. Goodwin Engineering Co., Birmingham, was architect and engineer.



For More Information on FORMS—CLAMPS—SHORES Write for Literature.

ENGINEERING NEWS-RECORD

EIGHTY-THIRD YEAR OF PUBLICATION

ABP ABC MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600;
Washington - REpublic 7-6630

Waldo G. Bowman, Editor

Highways, Airports—Transportation

Eugene E. Halmos, Jr., *Senior Editor*
Edward M. Young, Jr., Joseph N. Todaro

Buildings, Bridges—Structures

Frederick S. Merritt, *Senior Editor*
James B. Sullivan, John P. Mahoney

Rivers, Sanitation—Water Use

Arthur J. Fox, Jr., *Senior Editor*
Howard Jacoby, Marc Leggiero

Finance, Labor—Management

Clyde C. Henning, *Associate Editor*
Charles J. Harding

Regional Editors

J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Lauress L. Wise, *San Francisco, 68 Post St.*

Copy, Presentation—Production

Stanley C. Jensen
Barbara Lamb
Harry W. Jensen, *Presentation*
Katherine A. Lacy, *Makeup*
John C. Greenough, *Printing*

Statistics, Prices, Costs—Business News

Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel
Marion Sciorra, Florence Dembek
James Webber, *Economics*
Ruth I. Carlson, Marie Roessler, Evelyn Huber
Ingeborg von Zitzewitz, *Unit Prices*

Editorial Research and Indexing

Helen Rich
Eva Gierut, Rene Hay
Patricia Witschger, Marianne Stern, Ruth Solomon

Consulting Editors: **Van Tuyl Boughton**, *New York*
Nathan A. Bowers, *San Francisco*

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan E. Adams, Glen R. Bayless, Roy Calvin, Ernest Conine, John C. L. Donaldson, Louis R. Eltscher, Jay Flocken, Boyd France, Samuel J. Justice, Arthur J. Kraft, Donald O. Loomis, Gladys Montgomery, Arthur L. Moore, Norman B. Musselman, Andrew R. Patla, Seth T. Payne, Travis Dean Reed, Morton A. Reichek, Florence M. Reid, V. Craig Richter, Caroline W. Robertson, Vincent R. Smith.

Domestic News Bureaus: Cleveland News Bureau—1510 Hanna Bldg., Cleveland 15, Robert E. Cochran, Chief, William G. Meldrum, Michelle M. Perry; **Detroit News Bureau**—856 Penobscot Bldg., Detroit 26, Harry Homewood, Chief; **Pacific Coast News Bureau**—68 Post Street, San Francisco 4—Margaret Ralston, Chief, Jenness Keene, Sue Johnson, 1125 West 6th Ave., Los Angeles 17—John K. Shinn, Michael J. Murphy; **Seattle**—6040 Fifth Ave., N. E., Ray Bloomberg; **Southeastern News Bureau**—801 Rhodes-Haverty Bldg., Atlanta 3, Charles T. Dixon, Jr., Chief, Frances Ridgway; **Southwestern News Bureau**—Spartan National Life Insurance Bldg., Dallas, Kemp Anderson, Jr., Chief.

Correspondents: Albany, Albuquerque, Augusta, Me., Austin, Boston, Boulder, Baltimore, Birmingham, Bismarck, Charleston (W. Va.) Charleston (S. C.), Columbus, Cincinnati, Cleveland, Chicago, Cheyenne, Dallas, Denver, Des Moines, Detroit, Durham, Harrisburg, Helena, Honolulu (T.H.), Houston, Hartford, Indianapolis, Jackson, Miss., Jacksonville, Jefferson City, Kansas City (Mo.), Lansing, Lincoln, Little Rock, Miami, Memphis, Minneapolis, Montgomery, Milwaukee, New Orleans, Norfolk, Omaha, Oklahoma City, Philadelphia, Pittsburgh, Portland (Ore.), Providence, Phoenix, Pierre, St. Louis, Schenectady, Springfield (Ill.), Syracuse, St. Paul, Seattle, Salt Lake City, Spokane, Toledo, Topeka, Trenton, Wilmington. **Canada:** Montreal, Toronto, Ottawa, Victory, Regina.

McGraw-Hill Economics Department: Dexter M. Keezer, director; W. H. Chartener

Foreign News Bureau: Editor, John Wilhelm, **New York;** G. W. Schroeder, **Bonn;** Sharokh Sabavala, **Bombay;** William J. Coughlin, **London;** John H. Kearney, **Mexico City;** John O. Coppock, **Paris;** Dan Kurzman, **Tokyo:** Peter Weaver, **Rio de Janeiro. Correspondents:** Amsterdam, Athens, Bangkok, Bogota, Brussels, Buenos Aires, Caracas, Copenhagen, Geneva, Havana, Helsinki, Johannesburg, Lima, Madrid, Melbourne, Oslo, Rome, Stockholm, Sydney, Tehran and 21 other principal cities and countries.

Robert F. Boger, Publisher

ENGINEERING NEWS-RECORD, Vol. 158, No. 10, March 7, 1957

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. **Executive, Editorial, Advertising and Subscription Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Publication Office, 99-129 North Broadway, Albany 1, N. Y. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice President, Publications Division; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. **SUBSCRIPTIONS:** Address correspondence to Engineering News-Record Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address. Subscriptions are solicited only from persons with an identifiable commercial or professional interest in construction and building. **Position and company connection must be indicated on unsubscribed orders.** Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada $8.00 a year; $12.00 for two years; $16.00 for three years. All other countries $20.00 a year; $30.00 for two years; $40.00 for three years. Second class mail privileges authorized at Albany, New York. Printed in U. S. A.

Copyright 1957 by McGraw-Hill Publishing Co., Inc., All Rights Reserved.

Model 80-D
2½ yd. Capacity

Every NORTHWEST ROCK Shovel!

Here again you see *more* installations of Northwests in rock. Every Northwest is a *real* Rock Shovel because Northwests bring you the advantages that *make* a real Rock Shovel.

The Northwest Dual Independent Crowd that utilizes force most independent crowd shovels waste, the "Feather-[illegible]ach" Clutch Control, the Cushion Clutch, Northwest [illegible]ign and construction and other Northwest features all [illegible]bine to give high output in tough digging.—And, if [illegible] a *real* Rock Shovel you never have to wor[illegible] [illegible]ut in *any kind* of digging.

[illegible]ST ENGINEERING COMP[illegible]
[illegible] South L[illegible]

Model 41
1 yd. Capacity

Model 25
¾ yd. Capacity

Model 6
1½ yd. Capacity

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

PRODUCTION PLUS · MEANS MONEY ·

BUILT FOR A GREATER AMERICA

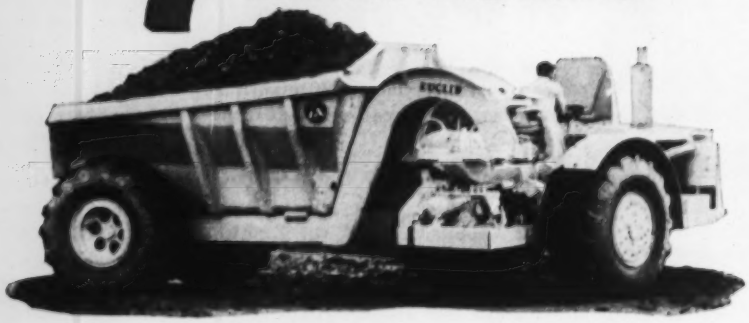
See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957

AMERICAN ROAD BUILDERS' ASSOCIATION

Euclid...the most complete

Euclid's expanded line of earthmoving equipment gives you the biggest range of types and capacities in the industry. Whatever your requirements may be—for a small grading job or a multi-million yard project—there are "Eucs" that will move more dirt at lower cost than other equipment.

7 REAR DUMPS



Payload capacities of 10, 12, 18, 22, 35, 40 and 50 tons...128 to 600 total h.p....5 and 10-speed transmissions and Torqmatic Drives... top speeds with full payload up to 36 mph.... overhung engine tractor models have 12 and 35-ton capacity semi-trailer bodies that are interchangeable with 7 and 18-yd. scrapers.

A new concept in tractor design, Model TC-12 has exceptional maneuverability and ease of handling. Each track has a separate power train with 218 h.p. engine and Torqmatic Drive for a total of 436 h.p.... speeds up to 8 mph. forward or reverse..."on-the-go" shifting...8 track rollers and 27" track shoes for balance and stability.

CRAWLER TRACTORS

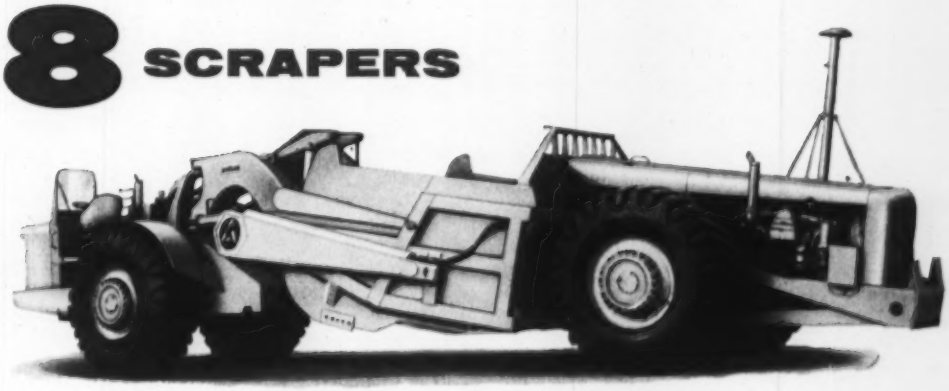
The TC-12 is the first production model of a complete line of crawler tractors now being developed and field tested by Euclid. It can be equipped with hydraulic or cable controlled blades and other heavy duty attachments.

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

line of JOB-PROVED earthmovers

Three types of scrapers with struck capacities of 7 to 24 yds.—9 to 32 yds. heaped . . . 143 to 518 total h.p. . . . standard gear transmissions and Torqmatic Drive . . . hydraulic lever action of bowl, apron and ejector . . . overhung engine scrapers have struck capacities of 7, 12 and 18 cu. yds. . . . 4-wheel tractor models carry 12, 18 and 24 yd. payloads struck.

8 SCRAPERS



Twin-Power models have 18 and 24 yd. struck capacity—25 and 32 yds. heaped . . . two engines, each with separate Torqmatic Drive for tractor and scraper axles . . . 436 and 518 total h.p.

4 BOTTOM DUMPS

Struck payload capacities of 13, 17 and 25 yds.—19 to 38 yds. heaped . . . 218 and 300 h.p. . . . Torqmatic Drive and standard gear transmissions . . . loaded speeds to 34 mph. . . . overhung engine Model S-12 has 13-yd. struck capacity.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

Before you buy any giant-sized
Measure TD-24 giant-sized

With full-time "live" power on both tracks, the TD-24 almost builds the road itself—hugging the mountain slope, giving added *operating ease, safety, and capacity!* That's another bonus from exclusive time-proven Planet-Power steering.

When you're 'dozing through rock and other materials, instant fingertip Hi-Lo shifting is a big cycle-speeder. And it cuts operator effort way down!

Try holding a 19-ton load on the blade with any other crawler this big—making a turn as this TD-24 is doing with both tracks pulling, while stockpiling coal with a special wing-type blade. The TD-24's operator can make "round-house," feathered, or pivot turns—with fingertip ease!

tractor advantages!

When you buy a big crawler look beyond sheer size and weight. You may be paying for enough extra "iron" to cause a startling jump in fuel and upkeep costs. So compare. Weigh bigness against provable working and earning capacity! Measure these giant-sized TD-24 advantages that have proven out over 8 years of on-the-job success!

Eliminates "dead-track drag!"

Does the giant you're considering steer with full-time "live" power and "live" traction on both tracks? TD-24 users by the thousands have proved that any crawler *this big* is obsolete without exclusive, time-proved Planet-Power steering advantages!

Planet-Power steering eliminates power-wasting, load-limiting "dead-track drag." Upgrade, downgrade, or on the level, you can smoothly turn a heavily-loaded TD-24—under positive control!

Does the big one you're looking at give cycle-speeding on-the-go shifting? The TD-24 does! And the exclusive two-speed planetary system teamed with a 4 speed synchromesh transmission —gives instant, stall-preventing and time-gaining Hi-Lo shifting, *without declutching.*

Does that big one you need have the genuine in-seat, seconds-fast, all-weather International gasoline conversion starting? Or the operating ease, power-transfer efficiency, and service-simplicity of the International Cerametallic-faced engine clutch? Or 8 practical speeds *forward and reverse?* Only the TD-24 has all these, plus dozens of other giant-sized advantages!

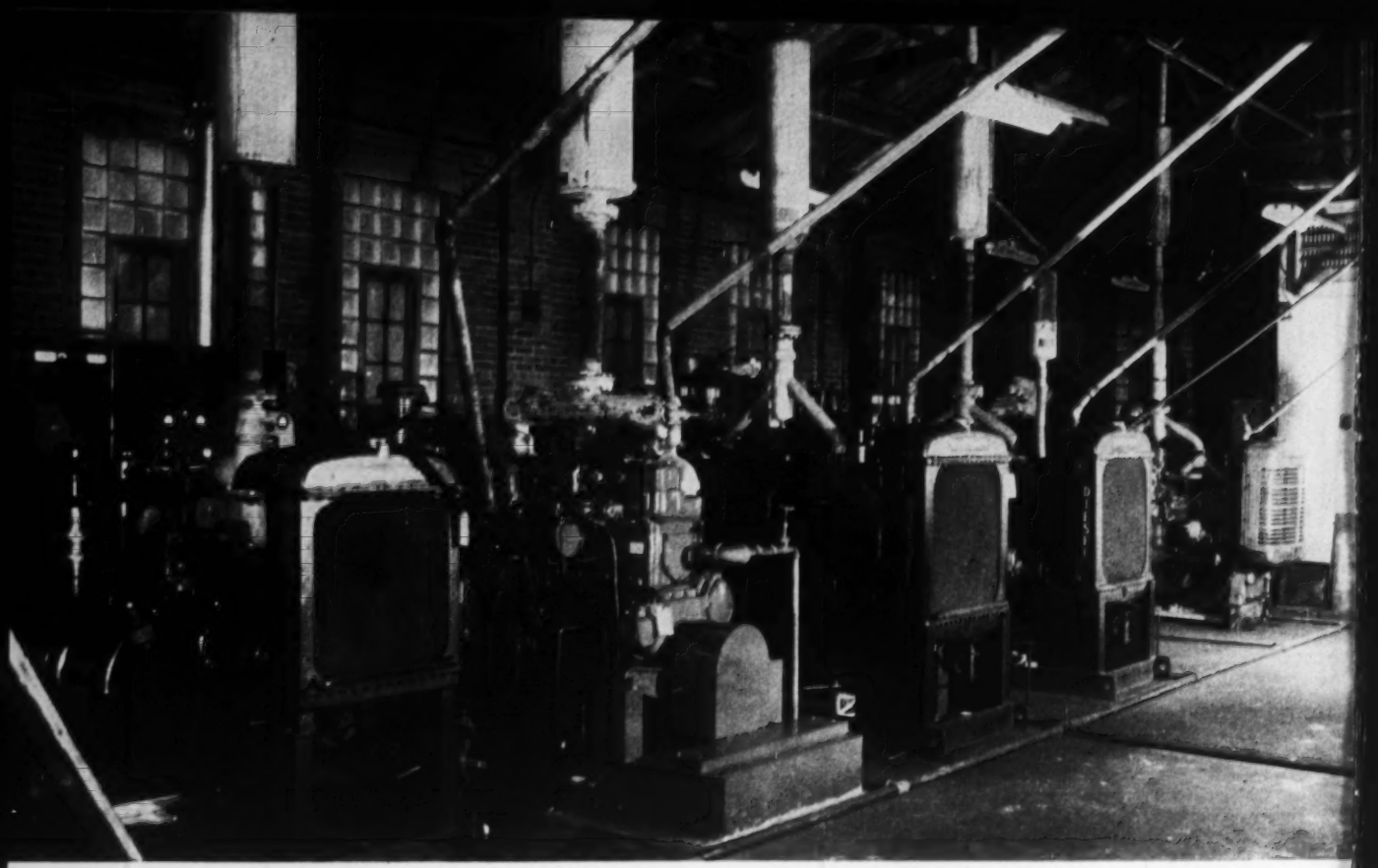
Prove to yourself the TD-24 beats all other giant-sized power – for *performance value* – for *big-scale ability to make you big money.* Ask your International Construction Equipment Distributor for a demonstration of a Gear-Drive or Torque-Converter TD-24!

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Side-Boom Tractors ... Self-Propelled Scrapers and Bottom-Dumps ... Crawler and Rubber-Tired Loaders ... Off-Highway Trucks ... Diesel and Carbureted Engines ... Motor Trucks

Heap-loading the sideboarded International "75" Payscraper in less than a minute proves the economy and efficiency of the TD-24 as a "pusher."



Here are five of eight International diesels that have driven Ready-Power generators in Standard Carbon's powerhouse for a total of 107 engine service-years. The UD-1091, second from left, is seven months old. The other 7 power units average over 15 years each of dependable service.

8 Ready-Power International driven GENERATORS CUT ELECTRIC COSTS 43%

Standard Carbon's International power units going strong after 107 service-years

The Standard Carbon Co., Steubenville, Ohio, is a nationally famous manufacturer of carbon brushes.

President W. F. Rogers fills in these details of their powerhouse operation: "We started in business in 1928 operating on purchased power. Back in 1939 we set up our own powerhouse—starting with an International PD-80 diesel power unit on a 48KW Ready-Power generator. Shortly thereafter we bought two more of these units. Today our eight Ready-Power generators are all driven by Internationals—*and we are generating power for 43% less than we pay for the 15% of the electricity we still purchase.*"

Supt. George Rogers adds: "Good service with only minor repairs sums up our experience with Internationals. Our Internationals have totalled 107 service-years—an average of over 13 years per engine. And only recently I rebuilt one of the 17-year-olds for the first time and still was able to reuse many of the original parts including the crankshaft!"

You, too, can get this same kind of completely dependable, low-cost power for your generator sets...or any driven machine in your pit or quarry. Simply call your easy-to-locate International Power Unit Distributor or Dealer. He can make power recommendations that are right for your needs. Equally important, his service facilities, his parts stock, his desire to be of service will help you get the most out of your engines. Call him soon.

INTERNATIONAL®

International Harvester Company
180 N. Michigan Ave., Chicago 1, Illinois

CONSTRUCTION EQUIPMENT

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks

Reader Comment

Recalls 1915 Precast Job

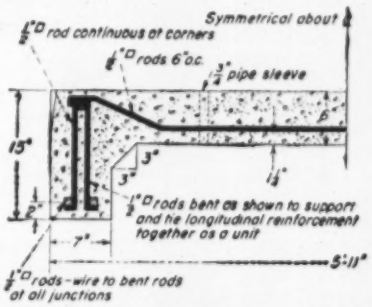
SIR—Mr. Dean's discussion of the Florida tests for precast bridge girders with attached deck slabs (ENR Dec. 20, 1956, p. 36) is particularly interesting to me because of my experience during 1914-15 in the construction of the Connecticut State Pier at New London, Conn. The pier deck was built with precast concrete channel sections, the top slab serving as the deck and the compression flange for the two ribs (see sketch right).

At that time little was known about precast concrete construction. A patent purporting to cover the method had been issued, but in our case it was used only for the one project, described in Engineering News, Nov. 15, 1915. The pier has been in continuous use as a steamship terminal since it was built.

The deck units, paved with 2 in. of asphalt, are supported on woodpile bents about 12 ft apart and are continuous over a middle support. Although it was expected that the deck would be uniformly loaded to 500 lb per sq ft, it has been used under about the worst conditions that could have been foreseen. All parts of it have been subjected to heavy rolling equipment—cranes, trucks and other equipment with axle loads exceeding 30,000 lb.

The precast sections have been remarkably efficient, but there will be an end to their usefulness. During the last year, cracks due to rusting of the reinforcing steel have been observed in the ribs. Also, most of our monolithic concrete implacements—abutments, retaining walls, etc.—built 50 to 75 years ago are a sorry looking mess now. Corrosion, though in some cases it proceeds slowly, is persistent where damp air comes in contact with the concrete. In another 50 years, many of these old structures may have to be rebuilt. And since the cost of all construction has increased four to ten times in the last 40 years, replacement will run several times the original cost.

Engineers are now building in concrete on a magnificent scale. To put off as long as possible the day when our new structures will need replacement, those that will be exposed to moist air should be protected with a permanent coat of damp proofing.



CROSS SECTION THRU CONCRETE FLOOR UNIT

G. L. BILDERBECK
Consulting Engineer
Groton, Conn.

On Upgrading Technicians

SIR—Your editorial "Upgrading the Technician"—Dec. 27, 1956—combines two stories in one, praising both actions indiscriminately, and criticizing opponents of the actions.

The State Personnel Board recently created new technician classifications at the same pay levels as the Junior Engineer and the Assistant Engineer classifications. The Division of Highways requested the new classifications. No one opposed them. In fact, the engineers very generally favored the move. The federal government has had such classifications for years, where subprofessionals could advance into the pay ranges of the lower professional classifications.

The other story covered in your editorial and falling under your blanket endorsement has a very much different color. Six years ago, while I was executive secretary of the California Board of Registration for Civil and Professional Engineers, the State Personnel Board was asked by the State Employees Association to create the classification of Highway Engineering Associate. The new classification was not requested in order to provide engineers with technical assistants. The sole reason for the proposal was to provide a promotional step, in engineering work, with an engineering title, to some persons who were not registered engineers. The Division of Highways opposed creation of the classification. The personnel officer of the division testified against it at State Personnel Board hearings and conferences. So did officials

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

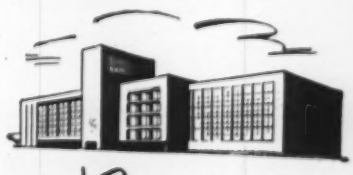
Building going up ...costs coming down

Marietta

CONCRETE WALL PANELS

Here's a new, modern building material that's slashing construction time and labor costs on every job. Marietta concrete wall panels are pre-cast in basic sizes either solid or with a rigid insulation core making them equal in "U" value to a 12" masonary wall. Cast-in metal inserts bolt directly to building framework and panels go smoothly together with tongue and groove fit for quick, easy erection in any weather. Pleasing architectural effects result from the broomed or colorful exposed aggregate exterior finishes.

Get the complete story on the many cost-saving advantages of Marietta wall panels . . . save as much as 30% in construction costs on your next building project. Marietta's engineering staff will assist you in your plans. Write for details and literature today.



THE Marietta
CONCRETE CORPORATION
Marietta, Ohio

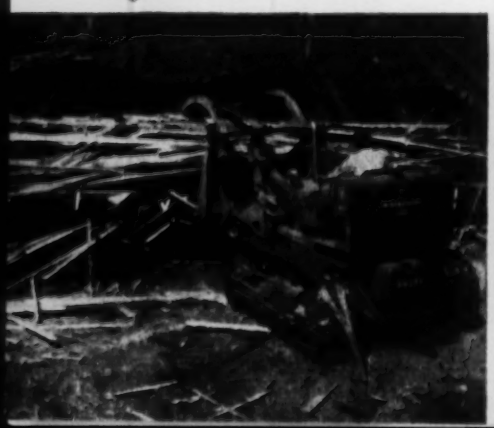
BRANCH OFFICES: Baltimore 21, Md., Charlotte 6, N.C., Nashville, Tenn., Jamestown, N.Y.

"multiple—

from one basic

Giving regular "carry-type scraper" action in *Bullclam* position, this TD-9 Four-In-One grades on-the-go with inch-close accuracy—to reduce a builder's landscaping cost. As a Bullclam, the Four-In-One can grade, strip, or spread with precision, typical of its multiple use-range.

Carrying a big load of mill-waste to the pile, this TD-9 *Skid-Grapple* indicates its usefulness to a contractor—on such jobs as brush-stacking on land-clearing jobs, or low-cost handling of posts or poles. The exclusive top grab-arm under separate control lets you clamp on to the load securely.



This *Rock Fork* of super-strong alloy steel is built especially for handling the weight and to withstand the abrasion of loading rock. This TD-14 Rock Fork is digging up and loading rocks and boulders to rip-rap a big earth-fill dam near Jacksonville, Texas. Rock Fork works with the 3 larger Skid-Shovels.

It's simple to install this heavy-duty, ground-ripping scarifier attachment. The third valve, standard equipment on all International Drott Skid-Shovels, furnishes control power for scarifying. This high-lift scarifier has deep penetration, and strength to shatter hard materials.

–machine" usefulness

International Drott units

You get the utility of four multiple-duty machines for one moderate investment in an exclusive International Drott Four-In-One. At a fingertip touch of the "machine-selector" lever, you instantly get your choice of four multiple-duty machine actions!

You get famous full-capacity *Skid-Shovel* excavating and loading performance. Or regular "carry-type scraper" action, in *Bullclam* position. Or as a *clamshell*, the Four-In-One gives you a load-gulping bucket—with hopper-high, bottom-dumping ability. And with clam-lip raised, you've got a responsive earth-rolling *bulldozer! You get versatility unlimited!*

And the identical International Drott *exclusives* that inspired Four-In-One design are also behind the development of an unmatched line of special-purpose attachments.

For example, exclusive concrete-smashing pry-over-shoe break-out action makes ideal boulder-bucking tree-grubbing power. Exclusive bucket-heaping ground-level roll-back is "just the ticket" for positioning Skid-Grapple loads of logs to semi-skid. And exclusive shock-swallowing Hydro-Spring constantly protects *all* International Drott equipment from impact!

Prove to yourself what amazing job-getting ability and money-saving capacity you command—with one of the four sizes of basic International Drott units—and whatever low-priced fast-switch attachments you need. Figure up the huge savings you make in machinery investment—and in hauling time and wages—getting multiple-machine usefulness. Ask your International Drott Distributor for a demonstration!

With *Grubber Blade* attachment instead of Four-In-One, or regular bucket, this International Drott applies the tremendous force of pry-action break-out. And a tough old oak tree with 22-inch trunk is uprooted with record speed—in a Vermont land-clearing project!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL®
DROTT®

Remove bucket and attach the *Bullangledozer*, and you have a real ditching, sloping, or shoulder-dressing outfit. Angle blade to either side or tilt as desired. On straight dozing, this versatile blade does heavy digging or fine grading under accurate hydraulic "radius control."

HOW TO HANDLE
WET JOBS

IS THIS A RECORD FOR DEWATERING SILTY SAND & CLAY?

Concrete box culvert, Old Bridge, N. J. Contractor: Almeida Construction Co.

PHOTO, JUNE 1—Griffin equipment shipped that day. Difficult swampy soil required use of specially designed sand filters around the wellpoints.

JUNE 4. Wellpoint system installed over weekend and excavation well under way. Actually, the 5 ft of water was under control just 20 *minutes* after pumping started.

That's how skillfully the filters were designed. P. S. Almeida called Griffin on the recommendation of a contractor friend. Ask *your* friends about Griffin.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

of every state-wide engineering society and several local societies. I opposed it on behalf of the Registration Board. And at least one other state agency opposed the move. Only the Employees Association supported it.

Opposition to the new classification by engineers was for two principal and several minor reasons. Under the civil service law in California positions classifications and duty assignments are made by the State Personnel Board. People are recruited to perform certain predetermined duties. Engineers and technicians cannot be assigned duties to utilize their highest talents. Engineering supervisors have no authority to determine which tasks require an engineer's talents and which tasks may be assigned to employees with more limited qualifications. The engineers' objection to the new classification was, and is, that it gives to a non-engineer agency of government (there are no engineers on, or on the staff of, the State Personnel Board) the authority to determine what work is engineering and whether an engineer or a technician will be assigned to it. One who is not a qualified engineer is not capable of making that determination. In investigating hundreds of violations of the registration law I never met the non-engineer who knew the limitations of his engineering competence. The classification of Highway Engineering Associate gives to the engineers in the Division of Highways not qualified technical assistants but non-qualified competitors.

The other principal objection to the classification was its title. Engineers asked at the time of the hearings that the position be called "Technician" or some other less misleading title than "Highway Engineering Associate." Proponents of the new classification obviously wanted their people dignified by an engineering title. Selection of that title is ample evidence that there was little thought of providing highway engineers with qualified technical assistants when the classification was created.

This is not the only field of state engineering operations where the engineers have less to say about their way of doing things than do outsiders. The State Department of Finance has authority to determine the organizational structure of the state agencies, that is, who will supervise whom. That department, by controlling the purse strings, can compel compliance with its wishes. So between the Personnel Board and the Department of Finance, two non-engineer agencies, the engineers are directed as to how and by whom, and even if, their projects will be executed. This excessive control by outside agencies, and the cost of their operations are probably the chief reasons why overhead costs run about 30% of the volume of new construction and 23% of the volume of new construction and maintenance done by the Division of Highways (Partial Report, Senate Interim Committee on Public Works SR 159-1953).

The State of California has a fine staff of thoroughly competent engineers. The machinery of government should be worked over so that they might be permitted to perform the state's engineering work as they believe it should be done. The change should give to engineers the right to determine the qualifications of the engineers employed and the nature of their work assignments. Engineering organizations should be built around the capabilities of their members as the responsible engineers evaluate those capabilities. Only in this way will California get "more engineering per engineer."

WILLIAM A. WHITE
Sacramento, Calif.

EDITOR'S NOTE—Six years ago the California Division of Highways may have been opposed—lukewarm would be a better term—to establishment of the Highway Engineering Associate grade. Officials of the division now are not. They believe that with today's engineer shortage the classification is not only desirable but necessary. As our editorial stated, we agree. Of the men appointed to this classification to date, about 20% have become registered and changed from the technician to the professional classification.

CALENDAR

1957 Nuclear Congress, coordinated by Engineers Joint Council, includes 2nd Nuclear Engineering & Science Conference, 5th Atomic Energy in Industry Conference, International Atomic Exposition and 5th Hot Laboratories and Equipment Conference, Convention Hall, Philadelphia, Mar. 11-15.

2nd Engineers Joint Council Nuclear Engineering Congress & Atomic Exposition, Convention Hall, Philadelphia, Pa., Mar. 11-15.

American Welding Society, Hotel Sheraton, Philadelphia, Pa., Apr. 8-12.

New York State Association of Highway Engineers, annual convention, Sheraton Ten Eyck Hotel, Albany, N. Y., April 10-12.

Building Research Institute, sixth annual meeting, Drake Hotel, Chicago, Ill., April 15-17.

Sanitary Engineering Conference on Solids Handling and Anaerobic Digestion, Manhattan College, New York City, Apr. 24-26.

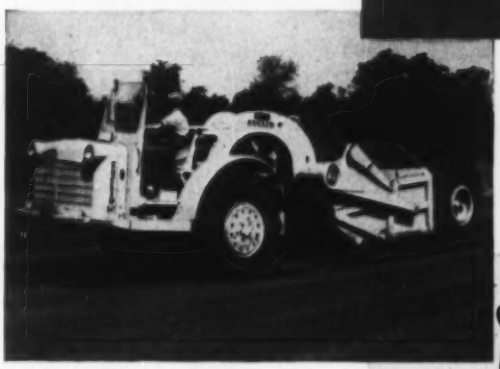
International Commission on Irrigation and Drainage, 3rd Congress, Sheraton-Palace Hotel, San Francisco, Calif., April 29-May 4.

Building Officials Conference of America, Inc., 42nd Annual Convention, The Jung Hotel, New Orleans, La., May 6-9.

American Water Works Association, annual conference, Atlantic City, N. J., May 12-17.

DO YOU KNOW?

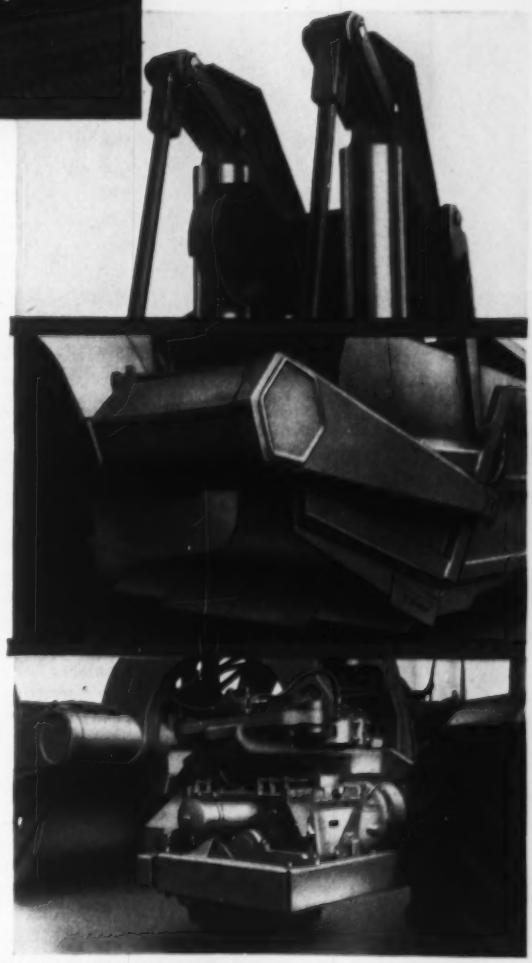
THE EUCLID S-7 SCRAPER . . .



143 horsepower, 7-yd. struck capacity, 9 yds. heaped at 1:1, 18.00 x 25 tires standard, 21.00 x 25 optional.

. . . is the easiest loading small scraper!

Self-loads in good scraper materials!



. . . is controlled by 4 hydraulic interchangeable hoists

Has only one cable 13 ft. long!

. . . cutting edge has 4 interchangeable sections!

Blade sections can be reversed easily for double life and positioned for straight or drop-center cutting edge!

. . . easy accessibility of components cuts downtime!

Clutch replacement in 1/3 the usual time for scrapers . . . transmission in only 1/8 the time . . . differential in 1/3 the time!

See your Euclid Dealer . . .

EUCLID DIVISION General Motors Corporation, Cleveland, 17, Ohio

Let him show you what these cost-cutting features can mean on your jobs . . . and why owners everywhere have proved that *Euclids are your best investment!*

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

ALONG THE ROAD. Day and night, Multisafty Cable Guard stands guardian of America's newest highways, giving two-fold protection from serious accidents. It restrains vehicles from plummeting off the berm. In addition, its resilient combination of strong, steel cables and spring-steel offset brackets cushions the shock of any collision . . . helps prevent damage to the vehicle and injury to passengers.

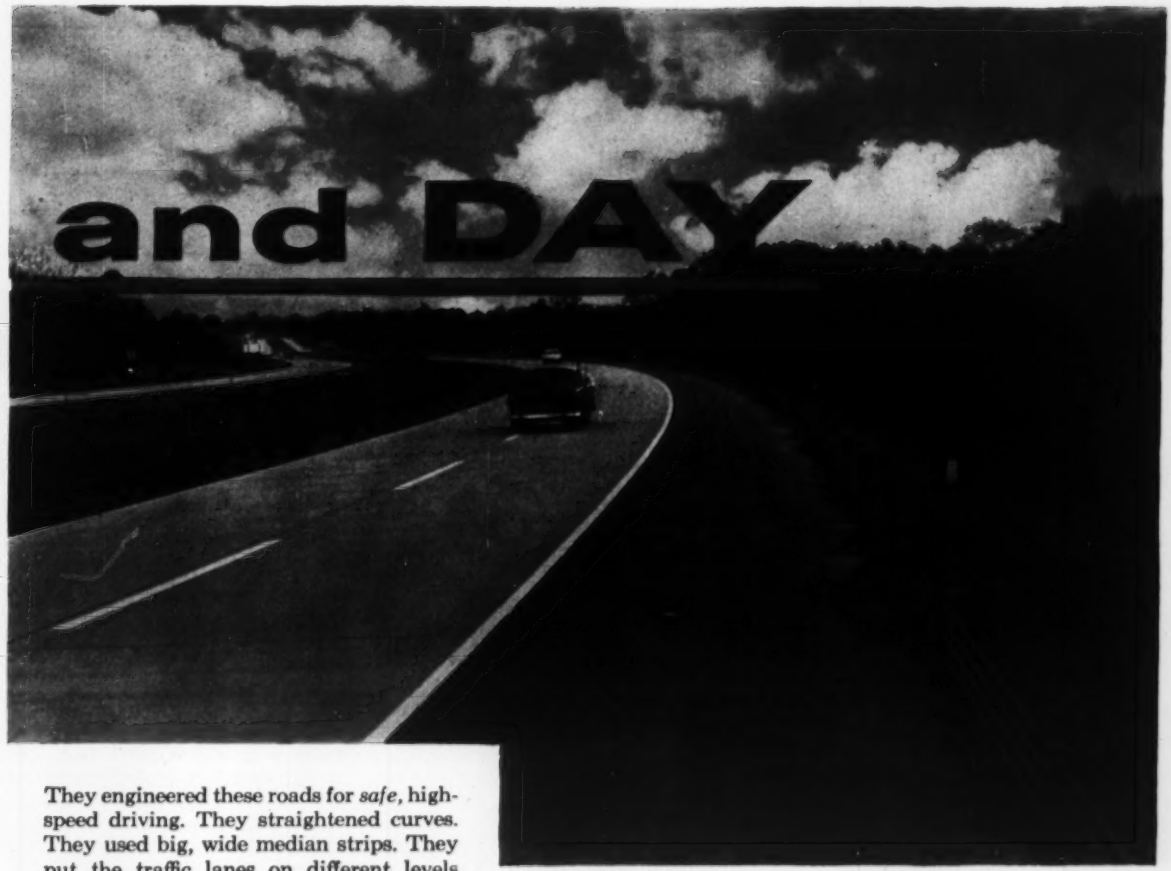
ECONOMY IN CULVERTS.

American Welded Wire Fabric brings the same service-lengthening benefits to culverts as to pavements. Concrete, reinforced with Welded Wire Fabric, is the economical way to build culverts because this combination of materials resists abrasion, has the strength to withstand high stresses, and is easily installed.

SEE The United States Steel Hour. *It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.*

USS Multisafty Highway Guard

USS



They engineered these roads for *safe*, high-speed driving. They straightened curves. They used big, wide median strips. They put the traffic lanes on different levels where possible. Then, they used construction materials manufactured by American Steel & Wire to enhance the basic safety designed into the road.

Materials such as Multisafty Highway Cable Guard which protects the sides of the road. American Welded Wire Fabric which lengthens the life of the pavement . . . keeps it smooth, easy-riding, and safe. And American Road Joints which smooth the transition from slab to slab.

These are essential materials for any truly modern highway. Use them in your roads . . . in your city streets.

AMERICAN STEEL & WIRE DIVISION
UNITED STATES STEEL
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.,
SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

IN THE PAVEMENT. A smooth pavement is a *safer* pavement, and American Welded Wire Fabric and American Road Joints help assure years of smooth, safe riding on great highways such as the Ohio Turnpike, the Pennsylvania Turnpike, the Indiana Toll Road, and others.

American Steel & Wire
Room A-66, Rockefeller Bldg.
Cleveland 13, Ohio

Please send complete information on the following products

- ☐ American Welded Wire Fabric for Portland Cement Concrete
- ☐ American Welded Wire Fabric for Asphaltic Concrete
- ☐ American Welded Wire Fabric for Airport Runways
- ☐ American Road Joints
- ☐ Multisafty Highway Cable Guard
- ☐ American Beam-type Highway Guard
- ☐ American Wire and Strand for Prestressed Concrete
- ☐ Road Manual

Name .....

Firm .....

Address .....

City ..... **State** .....

USS American Welded Wire Fabric

UNITED STATES STEEL

MUELLER

DRILLING MACHINES

...have broad application

Install control valves... connect branch mains... perform a wide variety of other water works operations...under pressure...makes cuts 2" through 12" in any type pipe...25" boring bar travel...working pressures to 500 p.s.i...working temperatures to 550° F... used with Mueller Inserting Valves, Tapping Sleeves and Valves, Gate Valves and special fittings.

...are easier to operate

Positive automatic feed for drilling... hand feed for rapid advance and withdrawal... hand or power operated... air or gasoline engine power units... feed indicator standard equipment... stuffing box adjustment during cutting.

...will last longer

All working parts completely enclosed in tight, oil-filled case... perfect lubrication... free from dirt... telescopic construction for compactness, strength and rigidity... special design prevents line pressure from entering gear case... ball thrust bearings reduce friction and wear... Fully Warranted.

Consult your Mueller Representative, your Mueller W-96 Water Works Catalog or write direct for full details.

"C-1" Drilling Machine

MUELLER CO. **DECATUR, ILL.**

Factories at: Decatur, Chattanooga, Los Angeles; In Canada: Mueller Limited, Sarnia, Ontario

100th YEAR — SERVING the Water and Gas Industries

Since 1857

"CC" Drilling Machine

Clipper®

SAILS RIGHT THRU

CONCRETE SAWING... BLADES

BEST for... All SAWS Any AGGREGATE Every JOB!

YOU NAME IT...

The Saw-The Job-The Aggregate

...Clipper will name the Best Blade to guarantee you the *FASTEST CUT* . . . at the *LOWEST COST*...with the *GREATEST EASE*—Anytime—Anywhere

FREE—A Factory Trained Representative will demonstrate a Clipper Concrete Saw right on your job, with Diamond or Green-Con Abrasive Blades and recommend the best Blade for your Job. You can see for yourself new speed and economy you never thought possible. Only Clipper, with its 20 years of experience, has facilities for research and development which offers the widest range of Blades for every concrete sawing need.

• WIRE—WRITE—PHONE your Clipper Factory Trained Representative for SAME DAY SHIPMENT on Clipper Superior Blades or for a free Concrete Saw demonstration. Clipper Concrete Saws are available in 3 6 H.P.—25 H.P.—14.6 H.P. Models For Control Joint Sawing—Plant Maintenance Work—Self-Propelled speeds up to 26 feet per minute.

MANUFACTURING CO. • Phone VIctor 2-3113 • 2800 Warwick • Kansas City 8, Mo.

Clipper®

MR. CLIPPER

ALBANY Phone 8-0338	**ATLANTA** MUrray 8-4229	**AUSTIN, TEX.** GReenwood 6-6555	**BIRMINGHAM, ALA.** ALpine 2-8240	**BOSTON** HAncock 6-0512	**BUFFALO** VIctoria 7707
CHARLOTTE, N. C. FRanklin 6-0257	**CHICAGO** SUperior 7-1351	**CINCINNATI** CHerry 1-5720	**CLEVELAND** CHerry 1-7080	**DALLAS** PRospect 3491	**DAVENPORT** Phone 6-2342
DENVER ALpine 5-6790	**DETROIT** WOodward 1-7117	**HARTFORD** CHapel 7-5768	**HOUSTON** CApitol 5-6616	**INDIANAPOLIS** WAlnut 3-8947	**LOS ANGELES** MUtual 4589
MILWAUKEE BRoadway 3-5362	**MINNEAPOLIS** FEderal 3-7629	**NEW ORLEANS** MAgnolia 5497	**NEW YORK** MUrray Hill 7-8460	**PHILADELPHIA** EVergreen 2-2962	
PITTSBURGH EVergIade 1-6200	**SAN FRANCISCO** UNderhill 3-4324	**ST. LOUIS** Mission 5-5530	**WASHINGTON, D. C.** REpublic 7-3087		

FACTORIES IN ENGLAND, FRANCE, GERMANY, ITALY.

527X

For Sikorsky's new 18-acre plant . . .

Architects and Engineers: F. A. Fairbrother and George H. Miehls, Detroit; with Albert Kahn Associated Architects and Engineers, Detroit, as consultants.
General Contractor: E. & F. Construction Co., Bridgeport.
Mechanical Contractor: John Winkle, Inc., Larchmont, N. Y.

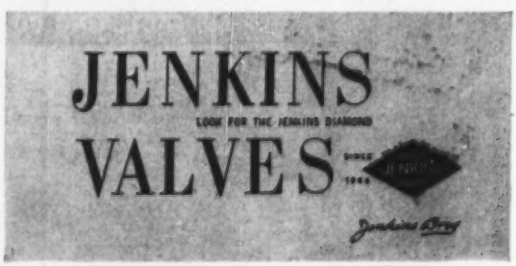
Where reliability is the watchword **JENKINS VALVES** were selected

Reliability has characterized Sikorsky Helicopters throughout a long record of military and commercial service. A watchword in the building of these versatile airplanes, *reliability* also was made the critical measure of all equipment for the 18-acre Sikorsky plant recently completed in Stratford, Conn.

On the valves to control much of the complex network of pipelines, management, architects, engineers and contractors found it easy to agree. From long experience on many jobs all could be sure of the reliability of Jenkins Valves.

This confidence in the specification "Jenkins", has been shared by building experts and plant operating men alike for 93 years. The valves that have won this great confidence bear the Jenkins Diamond trademark . . . and *they cost no more*. Jenkins Bros., 100 Park Ave., New York 17.

JENKINS VALVES shown controlling heating lines. Used throughout the Sikorsky plant on steam, water, air and process piping.



Sold Through Plumbing-Heating and Industrial Distributors

ENGINEERING NEWS-RECORD

Vol. 158 No. 10 March 7, 1957

Number of copies printed this issue: 76,389

CONTENTS

NATIONAL AFFAIRS

Who's Right About Winter Concreting? 23
Regional Look at the Road Plans 25
Chicago Substructure Goes at $10 Million 26
Connecticut Studies Ways to Finance Roads 26
Progress on Prestressing Code 27
Delaware River Dam Site Rejected 27
Gorge Dam Contract May Be Terminated 28
Floods Knock Out Brownlee Cofferdams 29

FEATURES

Breaking Jacksonville's Traffic Bottleneck 38
Railroad Makes Room for Highway 40
Thin-Shell Hangar Roof Spans Big Bays 44
Rainfall Histories From Tree Rings? 53

INTERNATIONAL

U. S. Money Aids Foreign Transportation 61

NEW PRODUCTS

Single Home Sewage Plant 71
Tiny Tractor for Special Jobs 72
New Torch Can Cut Through Concrete 74
Publications 76

FIELD AND OFFICE

Pipes Burn Off Garbage Gases 85
Steel Straps Cut Costs of Tying Column Forms 85
Welder's Huts Stop Pipeline Shutdowns 86

REASEARCH

College Plans Research on Construction 88

MEN AND JOBS

Reinhardt Leaves California Public Utility 101
Walker, Skidmore Honored by AIA 101
Hobbs Retires From Cement Association 101
LSU Selects New Engineering Dean 101

BUSINESS AND FINANCE

Building Contracts Lag, Others Boom 136
Engineers Get Tips on Productivity 141
Construction Markets: Pittsburgh 144
Materials Centers to Be Nationwide Chain 144
Construction Costs Dip Slightly 144

LABOR

Homebuilders Face a Complex Challenge 148
Labor Seeks Laws on Radiation, Safety 149

Reader Comment ... 10
Calendar 12
Washington Observer 21
Legal 91
Obituaries 104
Unit Prices 106
Materials Prices 108
Construction Reports. 111
Scoreboard 134
Editorials 164

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 35¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

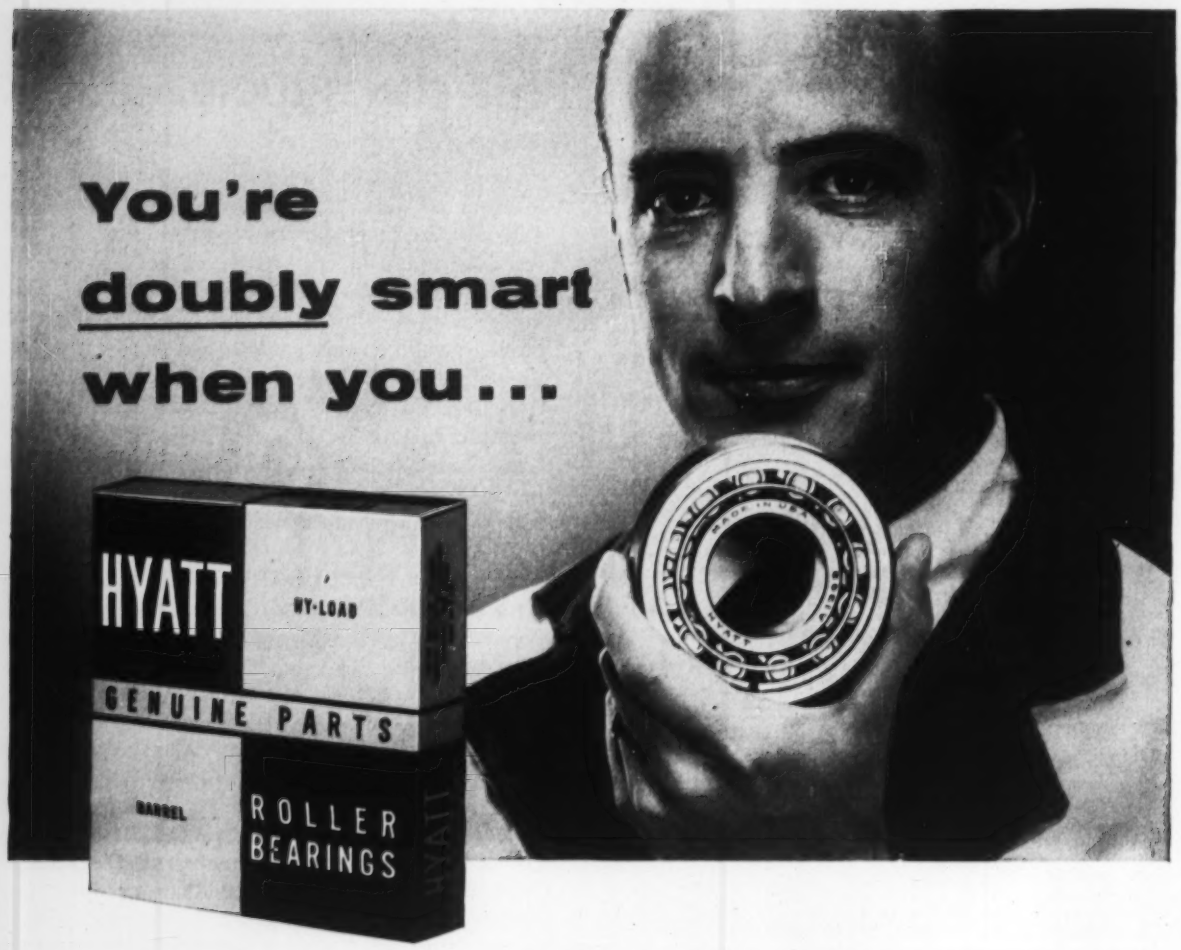
THE CONSTRUCTION WEEK

PLYWOOD PRODUCTION—By the end of last week, most of the Douglas fir plywood industry had cut back to a four day week. Lagging demand for plywood and 15% increase in productive capacity during the past year have forced mills to reduce output. So far this year, orders have dropped 8% below production. During recent weeks, this gap has been widening. Plywood mills generally have limited storage space, so output necessarily is tied closely to volume of shipments. In contrast to the plywood producers' plight, the outlook is getting brighter for Douglas fir lumber. The West Coast Lumberman's Association, spokesman for the major Douglas fir lumber mills, is predicting a marked pickup in demand in the next two months.

TALLEST BOLTED BUILDING—Union Carbide and Carbon Corp.'s new 52 story home office building in New York City will set a new height record for bolted steel buildings. This fact came to light this week when UC&C disclosed that George A. Fuller Co. had been awarded the contract for construction of the $46 million project. Exterior walls will be stainless steel and gray-tinted glass. Mullions, continuous from street to roof, will have the silvery color usually associated with stainless steel. Spandrels and column covers, however, will be black stainless steel. The New York firms designing the building are Skidmore, Owings & Merrill, architects, and Weiskopf & Pickworth, structural designers.

COLLAPSED BUILDING TO RISE AGAIN—Construction will be resumed in a few days on a concrete building that partly collapsed and killed 10 workmen last Oct. 3 in Jackson, Mich. (ENR Oct. 11, 1956, p. 24). No explanation has yet been made of the crash, which brought down several partly completed floors, but a special commission that investigated the mishap on the orders of Gov. G. Mennen Williams has yet to report its findings. First step in the resumption of the $4 million job will be the installation of heavy wood shoring. Then engineers will study in detail what repairs are required. Completion of the building is scheduled for late next year.

COMPUTER PROGRAM LIBRARY—Last week all state highway departments received a letter from Federal Highway Administrator B. D. Tallamy requesting them to join the Bureau of Public Roads' electronic computer program library. States were requested to forward copies of programs they have developed, which would be distributed to all interested states by the Bureau. No mention was made of private consultants in the letter, but the latters' role is to be discussed at the upcoming regional highway engineering productivity meeting in Los Angeles Mar. 5-7.



Always replace a HYATT with a HYATT!

There are two good reasons why you're smart to replace with *exactly the same* bearing the manufacturer specified for the application:

FIRST..... you assure the same smooth, trouble-free bearing performance originally built into the equipment.

SECOND.. you save time and trouble, because HYATT Hy-Rolls are so precision-built they're *completely interchangeable* without fitting adjustments.

Watch "WIDE WIDE WORLD"
Sundays on NBC-TV

Insist on HYATT Hy-Rolls—*be sure of lowest bearing cost per hour of service!* Hyatt Bearings Division of General Motors, Harrison, N. J.

Always look for the familiar blue and yellow box —when it comes to quality, there's no substitute for

AVAILABLE THROUGH UNITED MOTOR SERVICE DISTRIBUTORS EVERYWHERE

GM PARTS SALES

HYATT HY-ROLL BEARINGS FOR REPLACEMENT

WASHINGTON OBSERVER

Highway officials are shocked over sky-rocketing costs of the new federal highway building program. The first indications are coming in from the states on the outcome of the detailed cost estimates state officials are preparing for the Bureau of Public Roads. The new estimates will go to Congress finally next January.

Unofficial reports from half a dozen states show costs doubling in many cases. Estimates were given back in 1954 as the basis on which Congress voted the $25 billion federal aid legislation for the 40,000 mile interstate network. The new estimates will be used in making allocations to states for the three years beginning July 1, 1959.

Here's a sample of the cost increases that state officials are finding according to what Washington officials hear:

Texas figures show about a 75% increase in costs of completing its mileage—an estimated $1.5 billion, compared to the $872 million figure used up to now.

Nebraska's estimates may more than double the original figure of $106 million. The new range of cost is put at $180 to $200 million.

California's cost of completion may not go up 100%—although this was magnitude of the cost increase first heard here.

Montana's earlier guess of $153 million would go up by 70-80% according to a highway needs study made last year.

Nevada now expects a doubling of its $73 million estimate.

The same kind of cost increases are expected from other states including those in the Midwest and East with much urban mileage.

Interstate mileage cost estimates for Pennsylvania and Ohio, for instance, are going to be 'way higher. Pennsylvania's 1954 estimate of $760 million was obviously too low; figure that's submitted to Congress next year may more than double this. Ohio's $1.36 billion estimate—judged as much more realistic than Pennsylvania's—is rumored to be in for a sharp upward revision.

To check, it's worth noting that the BPR's nation-wide averages show a 10% rise since 1954, and ENR's statistics show rises of between 12 and 42% in 13 states (that top figure is for Montana, by the way). Also, in 1954 contractors' bid prices were scraping bottom after a two-year decline. But '56 and '57 have brought a sharp rise. Higher wages, materials cost rises, possibly underestimated costs of urban work are some of the reasons for the jump.

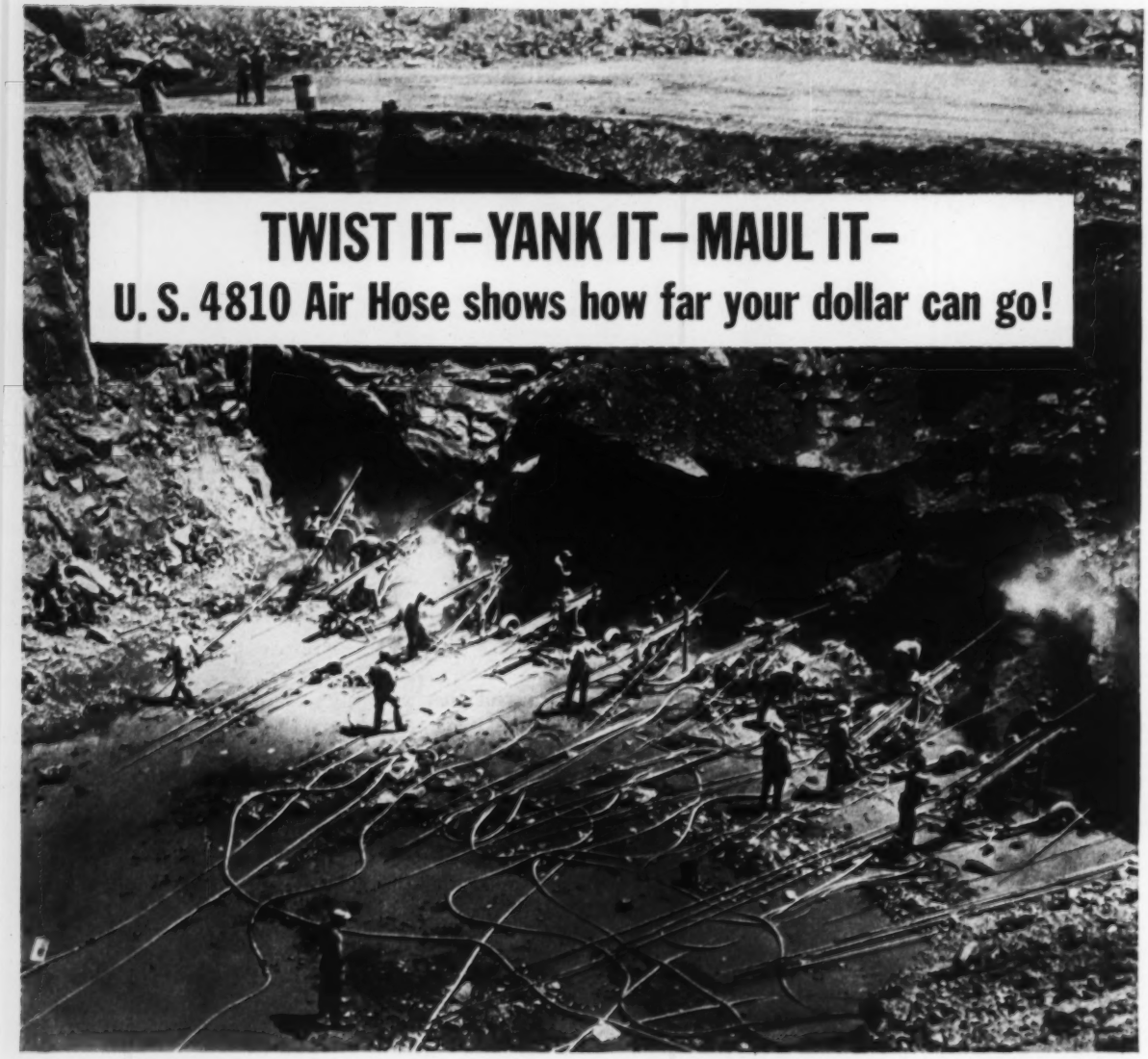
•

Lower down payments under FHA-mortgage insurance plans are sure to come. The Administration has proposed that down payment on a $10,000 house be permitted to go as low as $400, compared to the present minimum of $700. Lower down payment minimums would apply also to higher-priced units—houses carrying up to a $20,000 mortgage. On a $15,000 house, for example, down payments would drop from $1,950 to $1,150. **Both homebuilders and real estate brokers are in favor**—the homebuilders would like even lower minimums.

Chances for approval of such legislation are very good—the proposals would merely authorize FHA to use its discretion about lowering requirements to the minimums. Congress might, however, decide to remove FHA's discretion to set higher minimums. Now, FHA requires at least 7% on houses over $9,000, despite a legal minimum of 5%.

There's still the question of whether lower minimums would help the continuing down trend in housing starts.

US RUBBER AIR HOSE



This is the hose recommended for all pneumatic tools and air drills—for use wherever high working pressures, abrasion and general abuse would wreck an ordinary air hose.

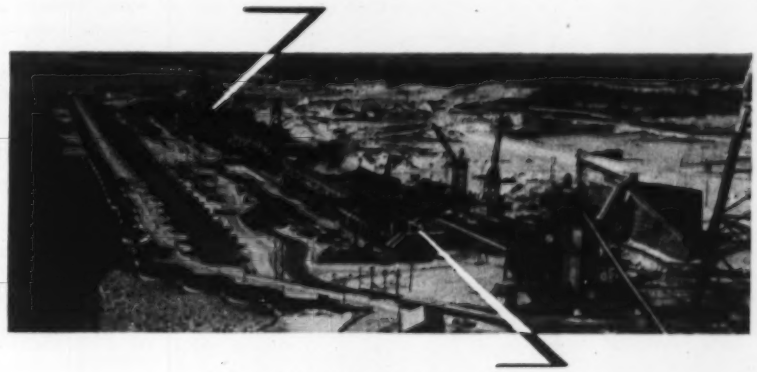
Heavy tools can drop on it. Pieces of rock from blasting can strike it. It can be pulled over jagged stones, grinding gravel—in all kinds of weather. *Throughout all this, U. S. 4810 stays unharmed, delivers full service.*

U.S. 4810 combines super adhesion and extreme flexibility. The rugged service that this hose provides throughout its long life proves that you are wasting dollars if cheaply constructed, short-lived air hose is being used instead of U. S. 4810 Air Hose.

A complete line of hose is obtainable at any of the 28 "U. S." District Sales Offices, at selected distributors, or by contacting us at Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.

US RUBBER Mechanical Goods Division **United States Rubber**

U.S. dambuilders were waiting for spring last week at their Barnhart Island end of the St. Lawrence Power Dam. But the . . .



• • • CANADIAN half of the dam was a bustling mass-concreting operation—as it had been all winter in temperatures to 40 below.

Who's Right About Winter Concreting?

Arthur J. Fox, Jr.
Senior Editor

There are two ways to build a concrete dam in the north country.

One way is to organize forces for a big eight-month effort. The other way is to concede nothing to climate, place concrete all winter.

The first is the U. S. way; the second is Canada's. Each has its merits, but in any given case, one way should certainly be better than the other.

Prime case in point is, of course, the St. Lawrence Power Dam, which last week was 16 units of snow-covered inactivity on the U. S. side of the border. Its Ontario half swarmed with workers as it has all winter on all but the one day in January when unofficial thermometer readings in Cornwall went 40 to 50 below zero.

Why do Canadians do it? How do they do it? Why don't U.S. dambuilders place concrete in winter?

• Why they do it—The Canadians reason why is not a single, simple answer. Many things are involved. Basically it's a matter of having learned by necessity to live with severe winters. Four months of winter are a fact to be reckoned with in Canada. It's either face up to the fact or lose one-third of every construction year.

It may be possible to let a big force go for the winter and get it back in the spring. But it has not been practical on big projects of the Hydro-Electric Power Commission of Ontario. In the first place, many of these projects have been remote camp jobs, far north in the bush. Laying off hundreds of men from such jobs each winter is inviting costly, yearly recruiting and retraining troubles.

Secondly, where would the Canadian construction worker go in winter if discharged? He can't readily pack off to Tennessee or Texas for a job at his trade (or at anything else) to tide him over. Canada's hardy construction force has no place to hide from Canada's rugged climate. It has to work—it **wants** to work—all winter. In fact, in summer, when there's timbering to be done in the bush and haying on the farms, the Canadian construction worker is harder to hold than he is when it's cold.

Neither the engineers nor the workers on this big St. Lawrence dam like the cold-weather work. ("It's for the birds!" —but the birds too, have gone south.) They put up with it, and they long for spring. But they know full well that their progress this winter is vital to the all-important schedule.

Ontario Hydro this year has set a 40,000 cu yd-a-month schedule for its contractor, Iroquois Constructors. In the summer months it may hit 12,000 to 15,000 cu yd a week, but it is evident that the established monthly average couldn't be maintained for the year without the 9,000 cu yd weeks that were accomplished in the dead of winter.

Concrete production can be cut by the cold weather, but not appreciably. It perhaps has been affected less by the weather this winter than by the types of pours being pushed. Current Canadian work on the dam involves many relatively small and intricate pours and much very densely reinforced concrete.

How many days does Iroquois Constructors' year-round concreting force lose in winter due to snow or cold? Actually, not much more than they lose due to rain in summer. That one day in January when the mercury plummeted to 40 below, the men handling reinforcing steel could not work. But, there have been many other days and nights below zero, during which big pours were successfully made.

They know that it is necessary to keep concrete above freezing to get any ap-

How Do the Canadians Do It?

They enclose the form and pipe in steam. That's basically the answer. But another important requirement is to deliver concrete at a regulated temperature between 50 and 80 F to the preheated forms.

Iroquois Constructors' heat source for all purposes is an 875-hp steam plant. Aside from heating a couple of buildings and the concrete batch plant, **this central source sends steam in one direction to warm fine aggregate in stockpile and in the other direction to its space-heating, curing and cleaning uses on the dam itself.**

Coarse aggregate—3 in. maximum size—comes to the batch plant cold. Manufactured fine aggregate comes from stockpile warmed to not more than 140 F. Cement has some residual heat from the milling. And the rest of the added heat goes into the water, which is the most effective place to put it. Water's ability to impart 1 Btu per degree lost per pound (specific heat = 1) is about five times the value of aggregate. So the water is warmed to whatever temperature is required but not over 150 F as it goes to one of the 2 cu yd mixers.

Mixed concrete leaves the plant at about 50 F for massive pours and about 70 F for thin sections on any one of three housed and heated belt-conveyors. One of these discharges directly into 4 cu yd buckets at a truck loading station. The other two long conveyor flights feed vertical drop pipes leading into surge hoppers, which in turn feed buckets on the dinkey-drawn flatcars running parallel to the dam upstream and down. Straddling these tracks on each side of the dam are two gantries (four in all) to do all lifting, including bringing concrete to the forms.

But before the concrete gets there, the forms must be readied.

CONCRETING IN WINTER means warmed concrete, heated forms.

If the temperature is 40 F and rising, the pour area must merely be enclosed (provided all ice is removed). But if it is colder than that outside, the enclosed space must be heated. Air temperature in the forms must be brought to 40 F, and kept there long enough to warm reinforcing steel, forms and concrete already in place (the construction joints).

(Ontario Hydro's construction joints are made by wire-brushing the surface of concrete as placed, then steam-cleaning it, sprinkling it with dry cement, wetting it lightly, and covering it with a thin layer grout before starting the next lift. **And lifts, it should be recalled, mean the predetermined distance between horizontal construction joints which may be 20 ft or more on Ontario Hydro work.)**

There are no rules on how many heaters it takes to warm an enclosure or a pour in progress. Temperature, space, and time are all variables. It's pretty much a matter of checking continually; adding heat, or letting it out as needed. **One of the largest pours this winter—in that week of 40-below weather—took 18 steam space heaters in the enclosure, but they did the job.** The men shed their coats to work in the 40 to 65 F interior temperatures.

Form insulation has been used on high narrow pier pours. Rockwool bats or fiberboard backing does the trick—so well, in fact, that insulated forms had to be released to cool off one block on a mild day in midwinter.

As concreting progresses, the tarps must be rolled back for each bucket of concrete and quickly replaced in the period between buckets. Doors or flaps on the enclosures must be kept closed, and heat losses must be guarded against.

As each block of concrete is placed, and while it cures, Ontario Hydro's **concrete technicians hover over it like trained nurses over a patient.** They keep a temperature record by regular checks on thermocouples installed in critical edges and corners of the concrete block as it is placed.

On each eight-hour shift there's a man who does nothing but carry a potentiometer from point to point, checking thermocouples at regular time intervals. A complete temperature history of each block of concrete placed is thus kept for the Hydro's concrete engineer, Neil Mustard, and his assistants in the concrete lab.

These curing histories are invaluable. They are a check on the cold-weather concreting specs, which call for curing in moist air between 50 and 70 F for the first three days and above 32 F for the remainder of 10

preciable gain in strength. They know that concrete frozen before it is 24 hours old is affected in its ultimate strength; and material frozen after 24 hours is most likely affected in its durability. Even with subsequent careful curing it will reach but about 50% of its normal strength if let freeze in the first 24 hours. So freezing is prevented by heating, and heat is removed with care to prevent thermal shock.

On the other hand, these concrete experts know that a mass of curing concrete can pretty well take care of its own temperature in moderately cold weather. Heat of hydration generated in the inner mass warms nearly the whole block. They have checked this out on 3 ft test cubes with thermocouples installed at measured points throughout. They know, for instance, that if concrete is placed warm enough, heat from within can get to the center of each face of the cube in such quantity to make ¾ in. plywood forms all the protection needed against freezing in the first 24 hours. They know that less heat reaches the edges and corners of the cube, and more heat radiates from the two and three exposed surfaces there; these are the parts needing protection. And they know that wind pulls heat all the faster from these points.

Knowing all this, the Ontario Hydro forces go purposefully and routinely about their winter concreting chores.

• **And why don't we?**—Where does all this leave U. S. dambuilders? Why don't they, too, concrete in winter in the north country where winter can mean one-third of the year?

Some of the reasons are implicit in the indicated differences in employment and economic conditions between the two neighbor nations.

A single very large reason is in our dambuilders' reluctance to go to the high lifts Canadians have used so long and so effectively, for certainly the cost of protecting a score of 5 ft high pours against freezing would far exceed cost of protecting five 20 ft lifts of equal total volume.

But are these, and other reasons good

days. Secondly, such close checks on the curing concrete permit Mustard and his crew to evolve practical and variable answers to the questions of when heat, and tarps, and forms can be removed from a given pour.

At the start of each day shift, the contractor's concrete superintendent can check with the Hydro's lab for releases on removal of protection. And upon receipt of official, in-writing release, he is free to take heat or covering, or forms from a given pour. It is a workable arrangement wherein the contractor is often permitted to remove protection before the 10 day curing period ends. Yet, no releases are issued without full and dependable temperature data.

A reasonable sequence for cold-weather curing has evolved: 3 days enclosed and heated; 3 days enclosed with heat off; 3 days with tarps off but forms on; forms taken off on the 10th day. But even this is not a rigid sequence. They play it by ear—or rather, by thermocouple. The object is to cool the mass about one degree per hour or no faster than 40 F in 24 hours.

Moisture for curing comes from the steam-coil space heaters, which have a pulsing discharge of condensate mixed with steam. While concrete is being placed, the discharge line is put outside the forms (where the worst it can do is wet the tarps so that they freeze and become unmanageable). When the pour is complete the discharge lines are pulled inside so that the heater discharge is used as a source of curing moisture. Heater fans are aimed so as not to dry any curing concrete surface.

All these careful methods are applied by Ontario Hydro—through its contractor on the job—with a confidence based in knowledge of how mass concrete behaves.

and sufficient enough for so great a divergence of methods?

Gordon Mitchell, who directs Ontario Hydro's work on the St. Lawrence Power Project, is a man long experienced in dambuilding and concrete is his forte. William Hogg, his field engineer and a master of job detail, exudes a complacent confidence in the established Hydro methods. Neil Mustard, concrete engineer on this job is a practitioner well versed in theory.

These men are not missionaries for the cause of winter concreting. They seek no converts; they don't argue or defend their methods. But the effort put forth there on the St. Lawrence this winter speaks eloquently for them.

Northeastern state highway officials take . . .

A Regional Look at the Road Plans

The many effects of the federal highway program on the future operation of state highway departments were the principal topics of discussion at the annual meeting of the Association of Highway Officials of the North Atlantic States held last week in Atlantic City, New Jersey.

The state-level problems of financing, planning, administering and supervising work to be done, plus the difficulties in right-of-way acquisition, the need for improved public relations, and the tremendous demand for liaison between state, federal, and consultant groups occupied the 400 delegates throughout the three-day session.

AHONAS President J. O. Morton—New Hampshire Highway Commissioner—opened the conference with a review of the role played by the group in the development of the highway program to date, and with a warning about the task which lies ahead. He stressed, among other things, the need for maitaining non-interstate highway work in the years to come, and the need for meeting the rigid schedule demands of the interstate program.

Bertram D. Tallamy, federal Highway Administrator, emphasized the urgency of advance planning. He reminded his audience that the present "good progress" in scheduling work is not conclusive proof that the states are in high gear. "Rather it is evidence of the large backlog of projects which had been resting in the hoppers of state highway departments," he said. With this backlog out of the way, he cautioned, the states will be in trouble unless they push planning and scheduling of all phases of the work.

As a means of expediting the program, Tallamy suggested close and constant liaison between highway departments and consultants. Consultants, he said, could well be visited as much as three times a week by a representative of the highway department, who has the authority and the ability to answer questions, make changes, and assist in coordinating the work.

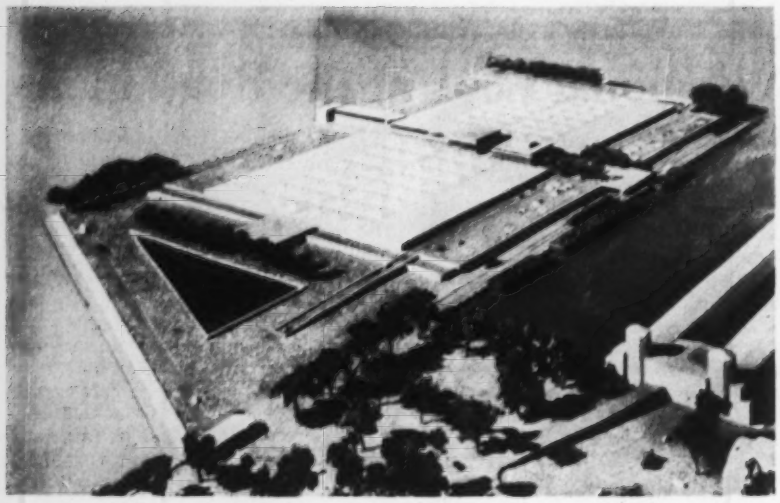
• **Public relations**—The one point stressed by virtually every speaker at the three day conference was the absolute need for an improvement in public relations. Frederick M. Auer of New Hampshire admitted that at times he feels more like a salesman than an engineer. However, the experience of his department proves that it is easier and faster to do an advance selling job than to fight the obstructionist tactics engaged in by a disgruntled business or taxpayer group.

J. D. Johnson, transportation specialist for the U. S. Chamber of Commerce and Henry J. Kaltenbach, Washington, D. C., right-of-way consultant also pounded out the need for good public relations. Said Johnson: "Local chambers of commerce represent a powerful and at times militant, pressure group. Their purpose is the betterment of local business and they are inclined to fight anything that may hurt that business. By demonstrating how a particular route or bypass can actually increase rather than decrease profits, state highway departments can not only eliminate controversy but can actually enlist the aid of local business associations."

• **Right-of-way**—In treating the problems involved in acquisition of right-of-way, Kaltenbach also cited the need for public relations, particularly where damages are involved. "While property evaluation is difficult, the evaluation of damages is infinitely more so," he told the group. "The trend toward higher verdicts in ordinary damage suits indicates that states can save money by doing a public relations job which does not antagonize people who think they are going to be hurt. Fairness, uniformity of evaluation, and an understanding of public attitudes towards condemnation proceedings are other important factors in right-of-way acquisitions."

In relation to another phase of right-of-way, Louis R. Marony, of the Highway Research Board, decried the inadequacies of highway laws. In warning state highway officials to carefully analyze the acquisition laws of their respective states, Marony said, "Last December, for example, ENGINEERING NEWS-RECORD, in a lead article stated that the nation's courts and lawyers will have at least as much to say about progress of the multi-billion-dollar highway program as will engineers, administrators and contractors."

Several sections of the Federal Highway Act were subjected to severe criticism by speakers and audience alike. The speed with which states were forced to act has resulted in many errors, inadequacies and ill will according to several participants. The restriction on service areas within the interstate highway lines was unanimously cited as cause for grave concern. A general fear was expressed that unless this restriction is lifted the resulting development of privately owned service areas at the interchanges will seriously reduce efficiency of the access routes so as to cause bottlenecks and traffic hazards.



For Chicago's $90 million filtration plant . . .

Substructure Goes at $10 Million

A contract totaling nearly $10 million was awarded Feb. 20 for construction of filter substructures for Chicago's Central District filtration plant just north of Navy Pier. This makes the fourth major contract awarded to date for the 960-mgd, $90 million plant which will serve the north two-thirds of the Windy City and some 30 suburbs.

Gust K. Newberg, Chicago, received the contract on a low bid of $9,867,000. Four other bids for the work ranged from $10 million to $12.6 million.

The filter substructures consist of two units, one at each side of the central headhouse area. Each unit contains 48 10 mgd filters with clearwells underneath the filters. Total area covered by the two units is 6.9 acres.

Major items of the work include: 34,000 untreated wood piles; 92,000 cu yd of concrete; 10,100 tons of reinforcing bars; and 500 tons of miscellaneous castings.

The entire plant is being built within a cofferdam that encloses a 61 acre area in Lake Michigan. The cofferdam was completed late in 1955 by the Great Lakes Dredge & Dock Co., under a $6.6 million contract.

Other major units of the plant now under contract include: 6 mi of large tunnels to connect the new plant with the existing water tunnels, Grafe-Tecon-Mittry and Drake, a joint venture; filtered water reservoir, Herlihy Mid-Continent Co.; and low lift pumps, Fairbanks Morse & Co. These four contracts total $24.2 million.

Naess & Murphy, Chicago architect-engineers, has been retained by the city to make the general architectural studies for the entire plant and to prepare detailed plans and specifications for all structures in the headhouse area. These include the low lift pumping station, chemical building, offices, shops, laboratories and chlorine building.

Four additional major contracts are expected to be awarded late this year at a total cost of about $22 million. Three of the contracts include filter equipment, settling basins and butterfly valves, for which plans and specifications are being prepared by the city's design engineers.

The fourth contract will be for construction of the headhouse substructure for the project.

Designs are being prepared under the supervision of George S. Salter, chief filtration engineer. George L. DeMent is commissioner, Department of Public Works; Dick Van Gorp is chief engineer, Bureau of Design; and Fred G. Gordon, assistant chief engineer.

Recalcitrant Ohio City Pressured on Pollution

Pressure on the Ohio River City of Gallipolis to treat its sewage continues to mount as a State Court of Appeals upheld the Ohio Water Pollution Control Board's refusal to renew the city's permit to discharge raw sewage.

Lower courts previously had ruled favorably on the city's contention that it would discharge raw sewage as long as other municipalities upstream were still discharging untreated sewage into the Ohio River.

Meanwhile, the Ohio River Valley Water Sanitation Commission is poised to take court action against Gallipolis to force the city to start on a sewage treatment plant.

Needed: $1.4 Billion

Connecticut studies ways to finance road program

Connecticut must raise $1.4 billion during the next 13 years to "remedy critical deficiencies" in its highway system, according to a report submitted to Gov. Abraham Ribicoff.

The bi-partisan Highway Financing Study Commission said in its report that the highway program will pose a major financial problem to the state, since it requires raising $450 million from revenue sources that are not "currently foreseeable."

While the commission said the problem of recommending specific sources of additional revenues is "far too complex" to cover in its report, it did say that unless the state continues its gasoline tax at the present rate of 6 cents per gallon, the state's ability to accelerate highway construction will be seriously impaired. (Under present law the gasoline tax is due to drop to its former 4 cents a gallon rate on July 1.)

In addition to retaining the existing gasoline tax rate, the commission recommended a review of charges on large commercial vehicles, particularly those from out of state.

The commission decries the fact that basically the state has financed its highway construction "by a politically acceptable level of taxation, rather than tax rates based on highway needs, and has made up some of the resulting deficiency by building toll roads."

In an analysis of the reasons for an accelerated highway plan, the study group came up with some comments that will apply not only to Connecticut but also to many other states: (1) in large population areas, there has been a substantial residential movement to suburban areas in which motor vehicles are the primary source of transportation; (2) the decentralization of residences is followed by a commercial development and a subsequent increase in truck traffic to outlying districts, (3) within the city, inadequate highway facilities have been a serious deterrent to business growth and have caused many important businesses to follow the residential swing to suburban areas.

Among the recommendations made by the commission were:

- Increase existing tolls or impose new tolls where feasible.
- Review and adjustment of commercial vehicle tolls and review other charges applicable to commercial vehicles.
- Pressure the federal government for relaxation of toll restrictions on federal-aid projects.
- Study the effects of pooling revenues from all toll bridges and highways, in order to finance new projects.

ACI convention gets report on . . .

Progress on Prestressing Code

Top item on the program of the American Concrete Institute's 53rd annual convention last week in Dallas was prestressed concrete. During the four-day meeting at the Statler Hilton, the delegates learned of progress made so far by a joint ACI-American Society of Civil Engineers committee on prestressed concrete, and they also found time to:

- Name a new president.
- Peek into the future.
- Honor several members.
- Adopt two new standards.

Devoting one general session to a panel discussion of prestressed concrete, the delegates heard a seven-man group headed by Thor Germundsson, of the Portland Cement Association, discuss a 56 page report, "Recommended Practice for Prestressed Concrete." The report dealt with design, materials and construction of linearly prestressed members. It was prepared by joint ACI-ASCE Committee 323 specifically for discussion at the convention.

In its present form, the report is not intended for use as a specification or code of practice. Committee members still disagree sharply on a number of points. However, the document eventually will be revised to eliminate as much disagreement as possible and will then be submitted for letter ballot.

• **Top post filled**—The delegates named as new president of the ACI Walter H. Price, head of the Bureau of Reclamation's Engineering Laboratory, Denver. Price succeeds Frank Kerekes, faculty dean, Michigan College of Mining and Technology. Elected to a vice presidency was Phil M. Ferguson, chairman of the civil engineering department, University of Texas.

In keeping with customary practice at ACI conventions, some speakers speculated on the future.

• **Automation foreseen**—Edward A. Abdun-nur, Denver consulting engineer, and Lewis H. Tuthill, of the California State Department of Water Resources, took a joint look at automation. They predicted that before very long, an operator of a concrete plant will be able to produce any one of a number of mixes simply by dialing a number. The plant will reset itself according to the required batch weights, automatically adjusting water quantities and aggregate weights to account for the moisture already in the aggregates.

Abdun-nur and Tuthill also stressed the need for the concrete construction industry to adopt more of the quality control and production methods developed by other industries. The authors presented a 19 point list of design criteria for writing specifications to insure uniformity of concrete work.

• **Former ACI head gets medal**—Among honors conferred by the convention, the Henry C. Turner Medal went to a former ACI president, Albert T. Goldbeck, "in recognition of more than 40 years of quiet perseverance in extending knowledge of concrete for use in highways and structures"; the Alfred E. Lindau Award was presented to Raymond C. Reese, consulting engineer, of Toledo, Ohio; the Wason Medal for the best paper of the year went to Lewis H. Tuthill and William A. Cordon; the Wason Medal for notable research went to Kenneth R. Lauer and Floyd O. Slate; and the Construction Practice Award was given to Roy R. Clark. Arthur R. Lord, Chicago consulting engineer, was elected to honorary ACI membership.

The delegates adopted two new standards, one for the evaluation of results of compression tests of field concrete, the other covering standard practices in detailing reinforced concrete structures. Copies will be mailed to the ACI membership for balloting.

Other reports and papers delivered at the convention dealt with hot-weather concreting, the use of concrete for sewage works, and tall-building frames of reinforced concrete.

A progress report of Committee 605 on hot-weather concreting was presented for discussion as a step leading to preparation of a recommended practice for this work. The problems were emphasized primarily with regard to the hydration heat of massive sections rather than season of the year in which work is executed. The discussion brought out several factors that accentuate the problems—fast tempo of construction, bigger batches of concrete, and high-early-strength cement.

• **Concrete in sewage jobs**—Concrete use in sewage works was the subject of a paper presented by E. C. Wagner, of the Portland Cement Association. He pointed out that the backlog of urgently needed sewage facilities in this country now totals $6.8 billion. Corrosion of concrete in sewage works can be reduced or eliminated, Wagner said, by providing adequate velocity of flow, ventilating sewers properly, eliminating excessive turbulence, using acid-resistant liners, applying chemicals to inhibit certain reactions, and using compressed air to keep sewage fresh.

Frank W. Chappell, consulting engineer, of Dallas, reported that column dimensions in tall building frames of reinforced concrete can be reduced in three ways: (1) using high-strength concrete; (2) using reinforcing bars with high yield point, and (3) using lightweight concrete for all members.

Cedric Willson, vice president and chief engineer, Texas Industries, Dallas, was general chairman of the four-day convention which had a registration of over 650. Next year's meeting will be held in Chicago, in February.

Damsite Switch

Wallpack Dam rejected, downstream site favored

Construction of a major dam on the Delaware River between New Jersey and Pennsylvania appears many years off now that the Philadelphia District, Corps of Engineers, has rejected the long-discussed Wallpack Bend site.

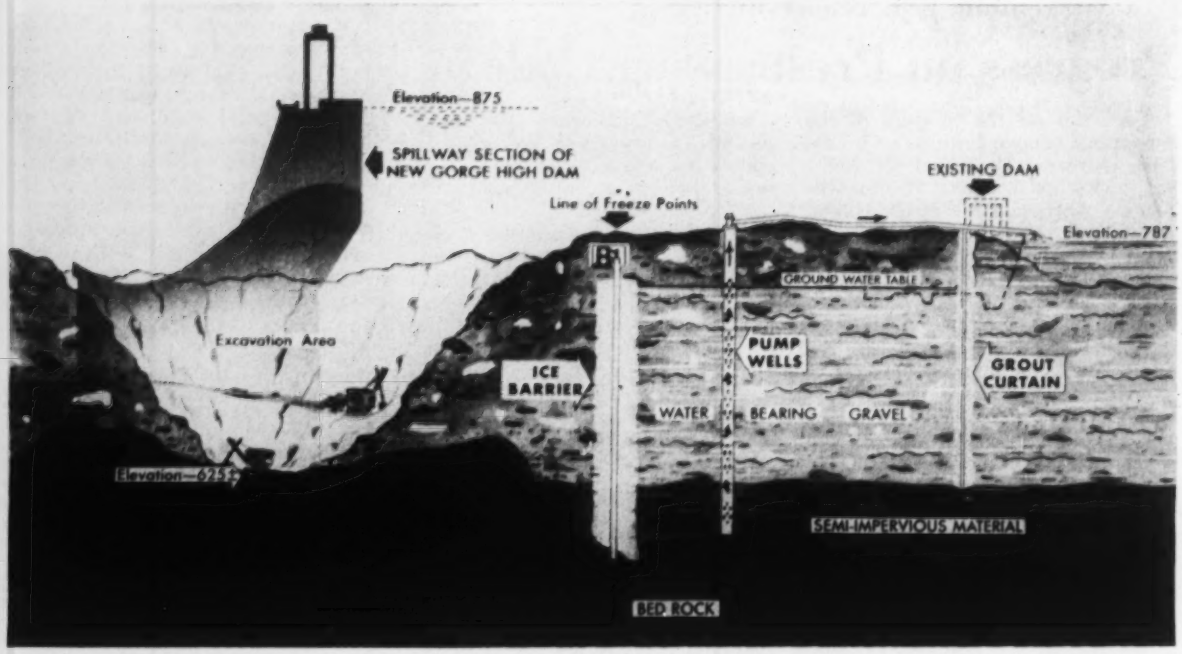
In a preliminary report sent to federal, state and other interested groups, the Corps office said a site at Tocks Island, 8 mi below the Wallpack site (which is 26 mi below Port Jervis, N. Y., the tri-state meeting point), would allow double the amount of water storage for an increase in cost of only 15 to 25%.

But the Corps isn't sure about costs nor about the Tocks Island site which it once rejected, in 1946, due to difficult foundation problems. And it won't be sure until two or three years from now when it completes a comprehensive study of the entire Delaware River Basin.

In the meantime, the states of Pennsylvania and New Jersey, which had gone ahead with studies at Wallpack based on the Corps' soil borings at Tocks Island, will likely sit on their hands since there now appears good prospect of federal flood-control contribution toward an eventual development at Tocks Island.

About one year ago Albright & Friel, Inc., Philadelphia, updated various engineering reports on Wallpack Bend Dam, proposing a $70 million project with 372,000 acre-ft of storage. Safe yield was just over 50 mgd, or enough to supply foreseeable domestic and industrial needs in a large service region (ENR Mar. 1, 1956, p. 28).

The projected dam at Tocks Island would store 635,000 acre-ft in a reservoir at the same nominal elevation as proposed for Wallpack Bend. Capacity in excess of supply needs would enable major flood-control benefits, and hence major federal financial participation. The difficulty is that suitable bedrock is indicated to be 160 ft below riverbed. Also, there is likely to be some legal objection to flooding of areas between the two possible dam sites.



With ice barrier scheme still imperfect and Gorge Dam a year behind schedule . . .

Builder, City Seek to Cancel Contract

With over $6 million already paid out, termination of the $15 million contract for Gorge Dam on the Skagit River appears to be agreed to by City Light officials at Seattle and the contractors.

They are not in agreement, however, on terms of the termination.

The contractors—Merritt-Chapman & Scott Corp. of New York and Savin Construction Corp. of Hartford, Conn.—have received the $6 million in progress payments since award of the contract Dec. 8, 1954, but assert they have suffered an "out-of-pocket loss of $800,000."

• **Road to parting**—City Light's dissatisfaction with the contractors stems from the fact that they are more than a year behind schedule. And it needs the additional 50,000 kw the dam will supply in order to meet contract commitments.

According to a spokesman for the construction department of MC&S, problems that have developed on construction of Gorge high dam are the result of failure of engineering specifications and methods under which the Seattle Department of Lighting (City Light) directed that construction operations be conducted, and are not the fault of the contractor.

Merritt-Chapman & Scott holds that City Light is now attempting to shift responsibility from itself and declares that public debate does not offer any solution for the situation.

City Light's spokesman, Superintendent Paul J. Raver, in announcing intentions to terminate the contract said difficulties were experienced with contractors "almost as soon as work was commenced" under the contract for the dam. "Several work schedules furnished by the contractor to the city were not approved, and the contractor's approach to various phases of the work was regarded as unrealistic," said Raver. "The city cautioned the contractor that the contract completion date of Feb. 4, 1959, could not be met unless the contractor manned the job more adequately and adhered more strictly to schedules."

DRILL RIG bores holes for freezing points to form ice barrier.

When the job fell a year behind schedule, the city notified the contractor and the surety on its bond that "substantial improvement would have to be made."

Friction between the contractor and the city over the ice barrier that City Light engineers designed to prevent flow of underground water into the dam excavation appears to have further aggravated the situation. A breach in the ice barrier developed last month. Raver said the contractor repeatedly has refused to comply with city instructions on measures to accelerate freezing of the ice barrier, and has challenged the city's authority to issue such instructions.

• **Wall of ice**—The ice barrier in question is part of the cofferdam system hit upon for Gorge Dam, which is located about 65 miles northeast of Seattle. A combination arch and gravity

structure, the dam includes an arch section, about 450 ft long at the crest, on the left abutment and a straight gravity section about 220 ft long on the right abutment. Maximum height of the arch is planned to be about 250 ft.

The new facility will raise the head on the existing Gorge power plant by 88 ft and increase capacity by 50,000 kw. The existing dam, 400 ft upstream, was, in effect, just a weir built on top of riverbed materials to divert water through a 2 mi tunnel to the powerhouse.

In designing the new structure, Seattle City Light engineers decided that ordinary cofferdam methods would not do. The riverbed is underlain by a mixture of boulders and other material that extends as much as 250 ft below riverbed level. To drive sheetpiling through this material would be nearly impossible. And other normal cofferdam methods also would be impractical. As the solution, Seattle City Light engineers and their consultant, J. L. Savage, developed the ice cofferdam concept. The scheme involves inserting freezing points into drilled casings to form a solid wall of ice to stop water that might otherwise seep into the dam excavation.

For first-stage cofferdam work, 143 6 in. holes, 4 ft apart, were drilled and cased, extending 50 to 250 ft to bedrock. In each hole is inserted a freezing unit made up of a 3 in. pipe capped at its lower end and containing a 1½ in. pipe extending to within 10 ft of the lower end. Calcium chloride brine cooled to −20F is pumped into the 1½ in. pipe and returns through the annular space between the 1½ and 3 in. pipe. Brine is circulated to the freezing points in parallel using twin, 10 in. dia pipe headers.

The setup is serviced by a 392 ton a day refrigeration plant with a pumping capacity of 1,500 gpm. Original plans had called for brine at −10F and a 250 ton a day refrigeration plant.

To reduce the amount of flowing water that the freezing system would have to handle, a grout curtain was placed at the existing dam upstream. Between the grout curtain and the ice barrier, a series of 12 in. cased wells was placed on about 50 ft centers. In this way, underground water that passed the grout curtain would be largely removed by the wells. Even so, "hot spots" that just would not freeze developed in the ice barrier. Attempts were made to plug these by drilling 6 in. holes and installing perforated casings through which Bentonite slurry was forced into the underground formation.

Due to the unusual nature of the ice barrier, Seattle City Light assumed responsibility for its adequate operation and for the cofferdam of which it is a part.

Excavation for the dam was started late last fall after the ice barrier was presumably adequately stopping the flow of water. Then early this year, new leaks developed causing a minor slide and excavation was halted. Whether the unsatisfactory operation of the ice barrier is the fault of the design or whether it is due to failure of the contractor to carry out modifications directed by the city is a major point of contention.

• **Hanging commitments**—Work under the MC&S-Savin contract was started early in 1955. Although the original schedule called for freezing to begin late that year, it did not actually start until the following summer. In this regard, the MC&S spokesman states that preparatory to actual freezing and at City Light's request, the contractor drove approximately 150% more brine shafts than had been originally specified.

The year delay has put City Light in a difficult position, for it is left hanging with a commitment to supply two electric furnaces which will go into operation in the Seattle plant of the Bethlehem Pacific Steel Corp. early next year. The furnaces will require 38,000 to 40,000 kw of power.

City Light was able to accept the Bethlehem contract only by stipulating to the Bonneville Power Administration that it would be met by new generation When the city closed the contract, several months ago, it still hoped to obtain enough additional generation from the new dam to supply Bethlehem. But the trouble with the ice barrier seems to have ended this hope.

Floods Knock Out Two Brownlee Cofferdams

Early flooding of the Snake River, swollen by melting snows, took out the two cofferdams (arrows) at the Idaho Power Company's Brownlee Dam project last week, but their loss was not expected to delay construction appreciably.

Glenn Johnson, resident manager at Brownlee for Morrison-Knudsen, said cutting of the cofferdams came earlier than expected but had been anticipated in planning. Normally, spring runoff on the Snake River comes in May or June.

Crews and equipment were shifted to upper spillway and intake excavations at higher levels, Johnson said. That phase of the work is expected to take from 3 to 5 months.

Engineers were not caught unprepared by the sudden rise of the Snake, brought on when warm southerly winds spread over the area, melting snow that frozen ground could not absorb. Cofferdams had already been cut close to water level.

The earth fill cofferdams will not be closed again until after the spring runoff, Johnson said.

Minor damage was done to several buildings and a steel footbridge.

Portland General Electric's Pelton Dam Project on the Deschutes River in central Oregon also took an early flood. Water topped a cofferdam, cut to relieve pressure, but did not take it all out. An earth filled section of a fish ladder was swept away.

MODERN HEAVY-DUTY CAT* FOR EVERY JOB

From a quarter century of diesel leadership, now comes the world's most advanced line of diesel engines.

Developed by Caterpillar research, these compact units pack more power in less space and deliver greater efficiency, greater economy and longer life in any application.

You have your choice of hundreds of variations in engines up to 650 HP (maximum output capacity), electric sets up to 350 KW (continuous duty) and marine engines up to 500 HP (continuous duty). They're available as original or replacement power for excavators, hoists, crushers, electric power, pumps, boats, loggers, sawmills and other equipment.

Why they do a better job than ever

These modern heavy-duty diesels feature the four-cycle design which provides a smooth, effective power stroke and a more efficient utilization of power. They require practically no attention. Their fuel system requires no adjusting. And Caterpillar's single-orifice fuel injection valves with the pre-combustion chambers permit the use of such low-cost fuels as No. 2 furnace oil without fouling. All these and other features add up to new standards of performance in diesel power.

A quarter century of diesel leadership

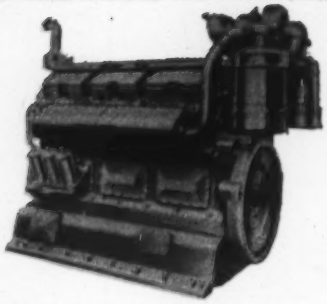
For modern power that stems from a quarter century of diesel leadership, specify Caterpillar units. Leading manufacturers can supply them in the equipment they build.

For complete information about them, see your Caterpillar Dealer. He backs you with prompt service. He has the experience and technical knowledge to help you with your power problems.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

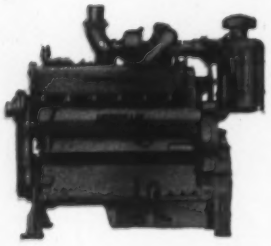
HUNDREDS OF DIFFERENT UNITS TO MEET YOUR POWER NEEDS

D397
with
Turbocharger
650 HP†



Also available as a Roots blown, naturally aspirated or spark-ignition engine — and as an electric set, marine engine or torque converter power unit. Choice of air, electric or gasoline starting system.

D337
with
Turbocharger
310 HP†



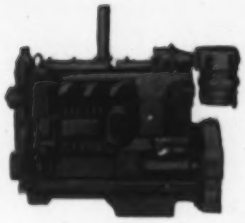
Also available as an electric set, marine engine or torque converter power unit. Choice of air, electric or gasoline starting system.

CATERPILLAR*

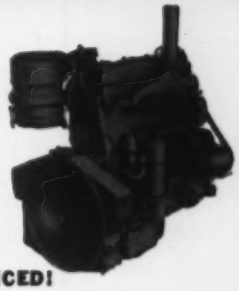
*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

DIESELS

NEW
D318
(Series G)
Turbocharged
175 HP†



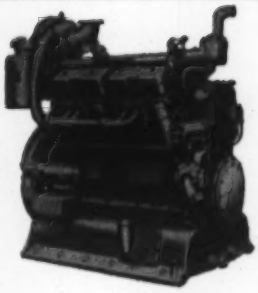
NEW
D315
(Series G)
Turbocharged
115 HP†



SMALLER, LIGHTER AND LOWER PRICED!

Keeping in line with Caterpillar's continued diesel leadership are these new Series G engines. They are designed for use in installations where space is at a premium. Both are small, light and low-priced; yet they deliver dependable power with the renowned Caterpillar durability. They are available naturally aspirated (above) or turbocharged. Choice of air or electric starting system.

D375
with
Turbocharger
430 HP†

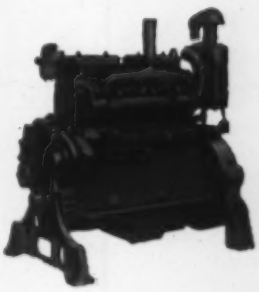


Also available as a Roots blown, naturally aspirated or spark-ignition engine — and as an electric set, marine engine or torque converter power unit. Choice of air, electric or gasoline starting system.

D342
Naturally
Aspirated
210 HP†

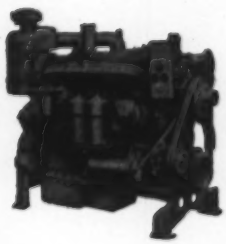
Also available as an electric set or marine engine. Choice of air, electric or gasoline starting system.

D339
Naturally
Aspirated
140 HP†



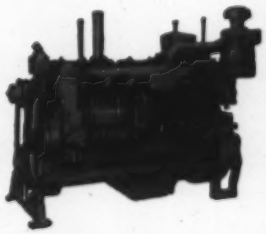
Choice of air, electric or gasoline starting system.

D326
Naturally
Aspirated
200 HP†



Also available as an electric set, marine engine or torque converter power unit. Choice of air, electric or gasoline starting system.

D318
Naturally
Aspirated
137 HP†



Also available as an electric set, marine engine or torque converter power unit. Choice of air, electric or gasoline starting system.

D315
Naturally
Aspirated
91 HP†

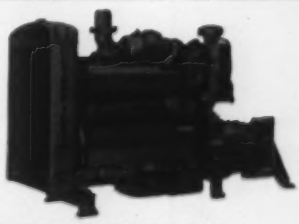
Also available as an electric set, marine engine or torque converter power unit. Choice of air, electric or gasoline starting system.

D311
Naturally
Aspirated
65 HP†

Also available as an electric set. Choice of air, electric or gasoline starting system.

ELECTRIC SETS

Dependable electric power, featuring the new Cat Generator, is available in standard voltages, 60-cycle, in the following KW sizes: 30, 40, 60, 100, 150, 165, 200, 225, 250, 315, 350. Also available as 50-cycle and DC units. The new generator brings you the best features of self-regulated and externally-regulated generators in one compact package.



TORQUE CONVERTER POWER UNITS

Many different arrangements are available for each of six Caterpillar Engines to provide you with a greater selection of power packages. You have a wide choice of power units and a wide choice of output shafts.

†maximum output capacity

'Way Down South in the Land of Cotton in ATLANTA, Ga.

75 STRUCTURES *REST ON* RAYMOND FOUNDATIONS

Here is one of the South's fastest growing cities—Atlanta, Georgia, the pride of the peachtree country. And Raymond is proud to be a part of this mushrooming metropolis. Over 50 of the buildings that rest on Raymond foundations—including the new City Hall, Union Station, Fulton National Bank, many of the Georgia Tech buildings and Rich's Department Store—can be seen in this view. Others, like the General Motors Plant, Grady Hospital, and the Piedmont Hospital are on the outskirts of the city. But, whether they are large or small, all of these buildings—as thousands of others across the country—symbolize Raymond's part in helping to build the future of America. If new construction is a part of *your* future, let us help.

THE RED DOTS INDICATE STRUCTURES BUILT ON RAYMOND FOUNDATIONS

FOUNDATIONS FOR THE STRUCTURES OF AMERICA

COMPLETE CONSTRUCTION SERVICES ABROAD

OUR 60th YEAR

RAYMOND

CONCRETE PILE CO.

140 Cedar Street, New York 6, N. Y.

Branch Offices in Principal Cities of the United States, Canada, Central and South America

You are cordially invited to send for our new Highway Brochure, which gives a detailed resume of how Raymond can help you and the National Highway Program. Just write Dept. E-4, Raymond Concrete Pile Co., 140 Cedar Street, N. Y. 6, N. Y.

Separate Legal Staff For Road Department?

A bill proposing a separate legal division for the Arizona Highway Department has caused a flare-up of opposition from the state attorney general's office.

The bill would permit the road department to engage its own legal counsel and operate independently of the state's law department.

Proponents contend that roadbuilding operations now are big business and the Highway Department should have its own legal staff.

Revised State Code Ready For Connecticut Builders

The Connecticut Public Works Department released a revised State Building Code Feb. 1. The publication contains in loose-leaf form all state statutes and departmental regulations pertaining to buildings and structures. Included for the first time are applicable regulations of the state fire marshal, health department, and the state labor department's factory-inspection division.

Under an automatic updating system, which will last through 1958, subsequent amendments will be mailed free to holders of the new code.

Fourth New Pier Slated For Brooklyn Waterfront

Construction plans for a $5 million finger pier of steel and concrete construction have been announced by the Port of New York Authority.

The installation—the fourth new pier to be bought under the authority's $85 million Brooklyn waterfront rehabilitation program—will be 710 ft long and 325 ft wide. It will comprise a shedded area of 180,000 sq ft, with 30-ft aprons on either side and a 20-ft apron on the outshore end. It will have 14 tailgate-high truck docks and a paved upland area of about 97,000 sq ft.

The proposed pier already is under lease to Booth-American Shipping Corp., which expects to take possession of the facility in May of 1959.

N. C. Moves to Get Full Highway Access Control

The North Carolina Highway Commission has adopted a motion giving it full control of access on sections of the interstate system highways within the state.

Adopted at the request of the U. S. Bureau of Public Roads, the motion follows recent action in the State Supreme Court in upholding the right of the commission to condemn private property for access roads. Federal funds for the state's interstate road sections have been held up while a property owner contested the commission's power in this direction.

The resolution says: "Engineers of the Commission shall incorporate provisions for full control of access in all future projects (of the interstate system) and the proper department of the Commission shall proceed to acquire full control of access on those sections of highways which are to be incorporated into the system and which have been or are being constructed with no control or only partial control of access."

In addition to adopting the policy on federal interstate roads, the commission also urged that sections of 4-lane superhighways not on the interstate system also be considered for controlled access to insure safety.

Ft. Worth Will Lengthen Carter Runway for Jets

One runway at Ft. Worth's Carter Field will be lengthened at a cost of $50,000 to accommodate jet airliners—expected in 1959.

The City Council has voted to extend the 2,050 ft runway to 8,450 ft and to advertise immediately for bids. Cost of the work will be shared by the city and the Civil Aeronautics Administration.

The extension reportedly would give Carter Field the longest runway in the Southwest, with the exception of Carswell Air Force Base.

Pacific Northwest Plans Four Natural Gas Lines

Pacific Northwest Pipeline Corp. plans to build four natural gas laterals in eastern Washington and northern Idaho this year. Plans call for a 40 mi, 6 in. dia line linking Coeur d'Alene with Kellogg, Idaho, at a cost of $900,000. A similar 21 mi line—a Spokane-Coeur d'Alene lateral—is slated for completion this year.

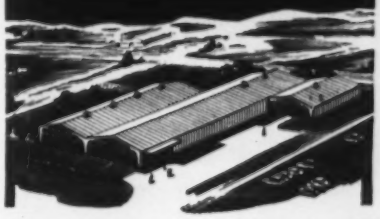
The Federal Power Commission has approved a $1.2 million, 38 mi pipeline of 8¾ in. pipe connecting Spokane with Chewelah, Wash., which is to be started this spring. And in the planning stage are a 17 mi line from the Canadian border to Metaline Falls, Wash., and a line from Kingsgate, B. C., to Spokane.

San Francisco Merchants Plan Non-Profit Garage

Proposal of a merchants group to build a $2.6 million non-profit garage in San Francisco has won the backing of the Parking Authority.

The authority recommended that the Board of Supervisors' Finance Committee permit the group to erect and operate the garage on the basis of re-

HOW TO BUILD AT LESS COST



Use Steelcraft Standard Steel Buildings!

Over-all, you can save thousands of dollars in material and labor because Steelcraft structural members are mass-produced to factory standards . . . pre-engineered for fast field assembly with a relatively small work force. Erection takes only weeks instead of months, so you *quickly* and *profitably* obtain full use of your new facilities.

You can choose from many standard design variations and options to get a building tailored exactly to your needs. These permanent buildings can be used for manufacturing, warehousing, offices, garages . . . any application. And, you automatically acquire "built-in" provisions for economical future expansion. Masonry or other collateral materials can be used as veneer to lend distinctive personality to the structure.

Steelcraft dealers can give swift delivery and complete erection service.

SEND FOR NEW 20-PAGE CATALOG

describing building types, construction details, and applications.

THE STEELCRAFT MANUFACTURING COMPANY
9017 BLUE ASH RD. DEPT. 33-E
CINCINNATI 42, OHIO

I want to find out how to build at *less cost, faster, better.* Rush me your new catalog of STEELCRAFT STANDARD STEEL BUILDINGS.

NAME _____
CO. _____
ST. _____
CITY _____ STATE _____

but whatever your preference in paving joint sealers . . . you're sure of top quality performance

with **PRESSTITE-KEYSTONE Paving Products**

Whether you're a cold-applied advocate or a proponent of the hot pour—PRESSTITE-KEYSTONE offers you the latest and the finest in both types of paving joint sealers.

These two reliable names are your assurance of controlled quality, dependable delivery and a personalized engineering service. Add to this your advantages of one complete buying source, one convenient inventory and billing account, plus the big savings of mixed-carload shipment.

make* PRESSTITE-KEYSTONE *your one-stop source for all your paving product needs

- Presstite Cold-Applied Joint Sealer #67
- Kapco® Hot Pour Asphalt Rubber Joint Sealing Compound
- Kapseal® Crack Filler
- Presstite Cold Applied Jet Airfield Joint Sealer #99
- Kapco® Hot Pour Jet Airfield Joint Sealer

ALSO: All types of pre-formed Expansion Joints, Tongue & Groove Joints, Concrete Curing Compounds, etc.

PRESSTITE PRESSTITE-KEYSTONE ENGINEERING PRODUCTS COMPANY KAP

A Division of AMERICAN-MARIETTA COMPANY
3784 CHOUTEAU AVENUE, ST. LOUIS 10, MISSOURI

turning to the city all revenues above operating costs and debt service. Parking rates planned are from 10 to 20 cents an hour.

The city will use its condemnation powers to acquire the site—expected to cost about $2.1 million—and will hold title to the garage and lease it for a 50 year period.

The merchants plan to build a 7 story self-parking garage that will accommodate 900 to 1,050 cars.

Structural engineer John J. Gould and architect John King have been retained to design the ramp-type garage. William J. Moran Co. of Los Angeles—scheduled to build another merchants' non-profit garage in San Francisco—will finance and construct this one.

Board Would Extend Licensing to Non-Graduates

The North Carolina State Board of Registration for Engineers and Land Surveyors is proposing legislation aimed at plugging "some loopholes in engineering licensing laws."

Legislation it seeks to have introduced in the 1957 session of the state legislature, which convened in February, would extend the range of persons eligible to apply for licensing.

"There are many people," says Board Secretary Robert B. Rice, "with potential for engineering who do not have the advantage of a college education. They still can learn the profession through on-the-job training with other engineers and engineering firms."

He said the board does not feel that these persons should be discriminated against simply because they were not able to attend college.

Oakland Votes $5 Million For Port, Airport Work

The Oakland Board of Port Commissioners has voted to issue $5 million in revenue bonds to pay for improvements in the harbor area and at Oakland International Airport.

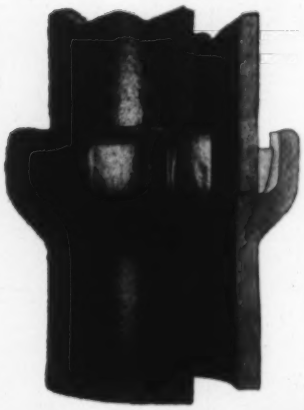
Largest project is a $1.3 million hangar at the airport for jet transports Additional plant and hangar facilities at the airport and plant expansion in the outer harbor area also are planned.

Income from the projects—including rental of plant facilities—is expected to retire the bonds in 20 years.

Disposal Units Required

Denver's city council has approved an ordinance requiring all new dwellings to be equipped with garbage disposal units. The action followed a report by the city building department showing that 90% of all new residences already are being equipped with the electrically operated disposal units.

Neither Rain, Nor Sleet, Nor Mud . . . slowed the installation of this AMVIT* LINE



If you can dig the trench, you can install Amvit Jointed Clay Pipe. Bad weather and mud won't slow the laying of an Amvit line.

The joint is on the pipe delivered to the job ready for use. Nothing else is needed. Just push the pipe together and the joint is complete.

No other materials such as caulking, joint compound, joint runners, hot-pots, or ladles are needed to make the Amvit Joint. Savings on materials and labor mean *lower cost of pipe in place.*

Amvit is a compression type joint on the ball and socket principle. No adhesives or other compounds are needed to make a tight seal. Once the joint is complete, nothing can enter or leave the line.

Amvit Jointed Clay Pipe, in sizes 4" through 24", together with all fittings, is available for immediate delivery in the Northeast and Central States.

For more information and our new Amvit brochure, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

SINCE 1900

AMERICAN

American Vitrified Products Company

CLEVELAND, OHIO

*T.M. Registered, Patents Pending

The Amvit joint is made of an acid resistant plastic material with rubber characteristics. Like the pipe, the joints will not be harmed by any condition of underground service. The pipe is simply pushed together. The trench is then ready for backfilling.

MANUFACTURERS of: Clay pipe, flue liners, clay liner plates and concrete pipe.

Plants Across the Nation... Brazil, Indiana • Chicago, Illinois • Cleveland, Ohio • Crawfordsville, Indiana • Detroit, Michigan • East Liverpool, Ohio Fenton, Michigan • Grand Ledge, Michigan • Lisbon, Ohio • Los Angeles, California • Milwaukee, Wisconsin • South Bend, Indiana • Uhrichsville, Ohio

The new Asphalt constructed Route 128, near Boston, replaces the old route built 25 years ago. The highway consists of two roadways each of which has three 13' lanes and a 10' shoulder. Roadways are separated by a depressed grassed median varying from 30' to ¼ of a mile. The pavement consists of 12" well-compacted gravel sub-base, 4½" penetration macadam base, 1¼" Asphaltic concrete binder course and a 1¼" Asphaltic concrete surface course.

Old road that gave traffic "the creeps"

... built with high economy ... for low maintenance ...

Outmoded road conditions slowed traffic to a creep on the old Route 128, in Massachusetts.

So a new, wider Route 128 was recently completed ... for today's and *tomorrow's traffic*. With greater capacities ... better layout, grades and crossing eliminations.

It's a smooth-driving, long-lasting Asphaltic concrete highway. Built at low cost. To make cars and trucks glide along, safely. And to be easy on taxes ... for generations to come.

Modern heavy-duty Asphalt construction has proved to be ideal for highways and primary roads in every section of the country. It allows unusual design versatility ... speed and ease of construction.

Asphalt pavement is resilient, rugged, skid-resistant. Glare-absorbent. It seals out damaging moisture ... is not affected by de-icing salts that usually damage other pavement. Snow and ice melt faster, too. The way ahead is clear, quicker.

In the face of rising construction costs you can keep within budgets by paving with Asphalt.

You'll keep costs down ... keep performance high ... keep taxpayers happier ... when you design for modern Asphalt construction.

replaced with wide, durable Asphalt Highway

and low future taxes

PREFERS Asphalt Construction

One of the companies that played a leading role in the building of the new Route 128 is the M. De Matteo Construction Company, Quincy, Mass.

The Superintendent of this company, engineer Roland S. Delaware, writes, "I have worked with Asphaltic pavements since 1931, and have always advocated the use of Asphalt in preference to other types of pavement. I like it from an engineering standpoint...and enjoy the riding qualities and speed of construction."

THE ASPHALT INSTITUTE
Asphalt Institute Building
College Park, Maryland

NOW... provide *COMPLETE* containment of water, wastes, brines and sludges with

SEALTIGHT **Hydromat**
ASPHALT LINERS

Pre-fabricated "HYDROMAT" Asphalt Liners provide the ideal liner for all domestic, industrial and recreational facilities where the containment of water, wastes, sludges, brines, etc. demand a very efficient, economical and impervious lining material. "HYDROMAT" is quickly and easily installed as a monolithic liner with mechanically sealed joints . . . will expand and contract with soil movements without rupturing or breaking the seal. Installed over (exposed) or under earth, concrete, gunite, steel or other materials.. provides the practical answer to the problem of re-lining old, cracked concrete or gunite linings. "HYDROMAT" may be safely used for the containment of potable water in clear well construction and its ruggedness and durability permit its use as a fully exposed lining in large reservoirs to depths exceeding 50 feet. "HYDROMAT" is available in three thicknesses, ½", ¼" and 5/32", in 4' widths and lengths up to 15' . . . longer lengths available on special request.

For complete installation and technical data write today for your copy of the "HYDROMAT MANUAL".

SEALTIGHT PRODUCTS FOR BETTER CONSTRUCTION

W. R. MEADOWS, INC.

KIMBALL STREET
ELGIN, ILLINOIS

W. R. Meadows, Inc.
16 Kimball Street, Elgin, Illinois

Gentlemen:

☐ Send my copy of the "HYDROMAT MANUAL".

☐ Have representative call.

NAME_____ TITLE_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____

Breaking

The broad, sluggish St. John's River has generally been an asset to the city of Jacksonville, Fla., providing access that makes the city a seaport, and a trading center for inland areas downstream from the city.

At the moment, however, the river is a problem—it blocks movement of vehicular traffic by confining it into a narrow neck of land less than 10 blocks wide at one point that is also the main route from the city to newly-growing suburbs, and to coastal resorts further down the Florida peninsula. Three of the four bridges crossing the river from Jacksonville converge at this point, and the resultant traffic confusion has given rise to an expressway system design that the designer aptly has named a "braiding system"—literally weaving the three bridge approaches and two main highway connections together so as to provide the best traffic pattern in the least space.

Known locally as the "tri-bridge" area, the section is directly south of the center of Jacksonville, cut off from the rest of the city by a 180 degree bend in the river. The three bridges carrying motor traffic—the newly-completed (1954) Fuller Warren toll bridge, the older Main Street and Acosta bridges—and a railroad bridge, converge on the peninsula like spokes of a wheel. Together, they handle a daily traffic volume of more than 65,900 vehicles.

When Jacksonville's long-planned $70 million expressway system is completed, the Warren bridge will be connected by a freeway to U.S. Route 17 to the North of the city, and by an elevated roadway south of the river to U.S. 1—thus providing a direct route through the city without major traffic interruption.

But traffic across the bridges isn't the whole problem. The business section in the tri-bridge area has grown greatly in the past few years, helped along by a new office building of the Prudential Insurance Co. that houses several thousand employees, and other new structures.

Adding further to the congestion are delays caused by grade-crossings of main-line tracks of the Florida East Coast Railway that knife across the peninsula from north to south, and the frequent need to open drawspans of the three bridges, to accommodate waterbourne traffic.

• **Problem**—Thus the problem for the Florida State Roads Department and its consultant, Reynolds, Smith & Hills of Jacksonville, was this:

To provide a through route for traf-

Jacksonville's Traffic Bottleneck

TRAFFIC PROBLEM for motorists traveling through Jacksonville is created by the St. John's River which cuts through the city in a 180 deg arc. On the north side of the river, the system under construction will speed cars northward, collect city vehicles.

fic crossing the city on heavily-travelled Routes 1 and 90; provide access to all three bridges for local traffic; clear as many of the rail grade crossings as possible; yet interfere as little as possible with traffic on the peninsula itself.

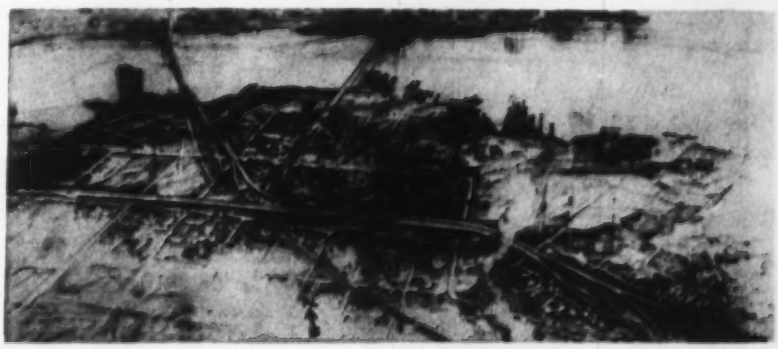
And all this had to be done with the greatest possible economy of space, to avoid excessive land acquisition costs.

• **Solution**—Basically, the tri-bridge area expressway system was conceived as an eight-lane road, with a 4 ft median, to run almost due west from the Warren bridge plaza for about 16 city blocks, before coming to earth in connections to the two southbound major highways.

Enroute, the elevated section would pick up roadways from the other two bridges at a central point, and provide access to and from local streets.

Key consideration, however, had to be that a large percentage of the vehicles using the system would be forced to weave through parallel traffic lanes in order to reach desired exit points, unless the facility could be designed so as to position each vehicle in its proper lane. This dictated the development of the "braiding system"—a series of over-and-under roadways that would connect to the main line, without interfering with traffic flow. A total of nearly a dozen overpasses will be built to achieve this result and to clear local streets. When completed, it will be possible to enter the expressway from any of the three bridgese through a mammoth interchange that will be more than five blocks in length. Access will also be provided at this interchange, and at the eastern end of the elevated section.

• **Other sections**—Much of the remainder of the work required to complete the Jacksonville Expressway is fairly routine construction work, with the exception of a master interchange on the north side of the city, at the intersection with Route 90 (Beaver St.).



SOLUTION, viewed in sketch from south side of stream, is complex elevated highway section and interchanges, lading traffic to southbound roads at right. Numerous railroad, local street crossings will be eliminated.

A Railroad

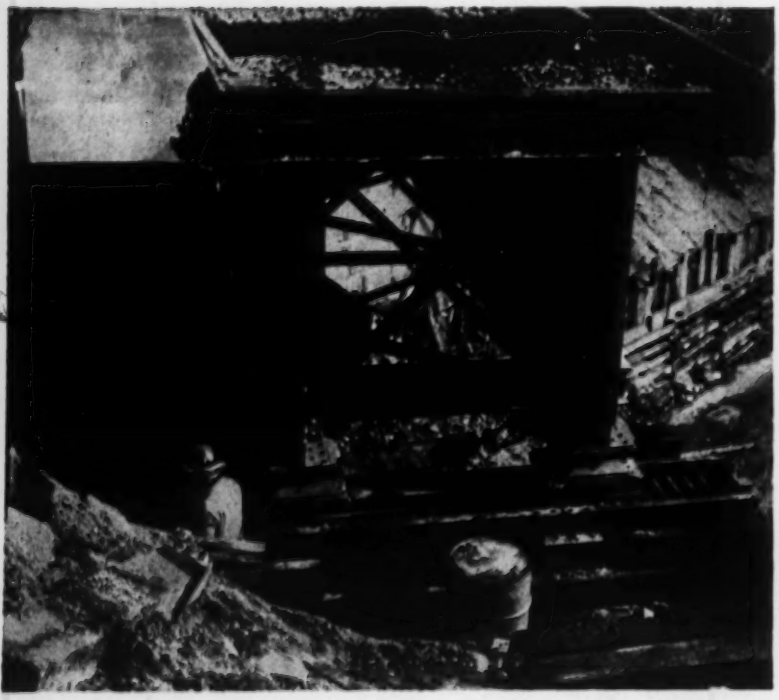
A proposed 4 lane highway under passing a single track of the Long Island Railroad near Manhasset called for tearing up 200 ft of track and replacing it with a 200 ton, three span plate girder bridge. High fill made a temporary bypass line impractical but

The Job at a Glance . . .

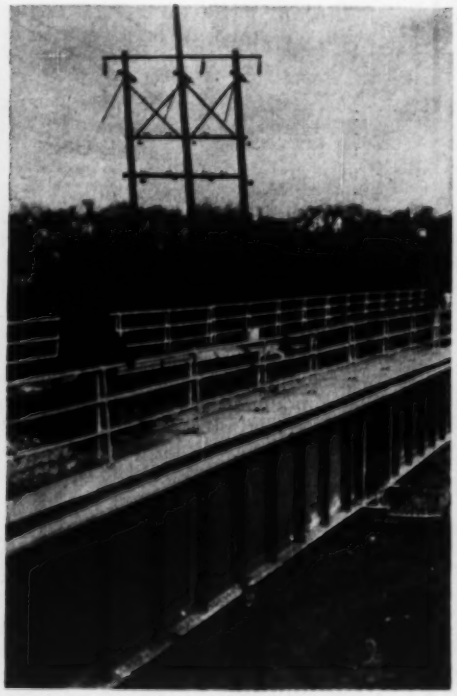
Narrow tunnel-like structure at left center (A) carried traffic under fill-supported track. To get ready for new highway, the plate girder bridge (B) had to be constructed and connected without serious disruption of train schedules.

. . . Here's How it Was Done →

1. New Bridge is built in three sections on leveled area just south of existing track. Here men place concrete roadbed on an



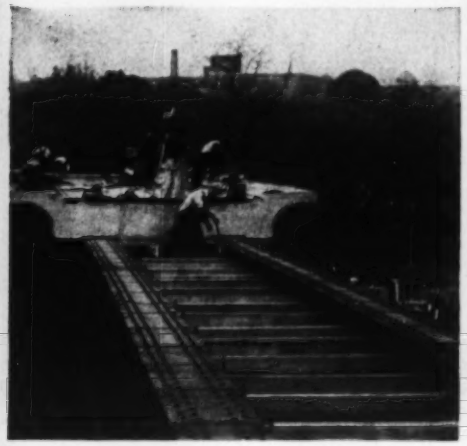
3. A close-up of the west span being positioned, complete with ties, rails and ballast. Rollers slope slightly in direction of travel, and for clearance of substructures, they have been shimmed to hold the sections 15 in. above final location.



4. With all spans in proper alignment, they are jacked off the rollers and lowered to final supports. Here, the east

Makes Room for a 4 Lane Highway

both rail and vehicular traffic had to be maintained. To do the job piers and abutments were installed under the track, and the bridge was built beside it. Then in 24 hours the old track was removed, the new bridge was rolled into place.

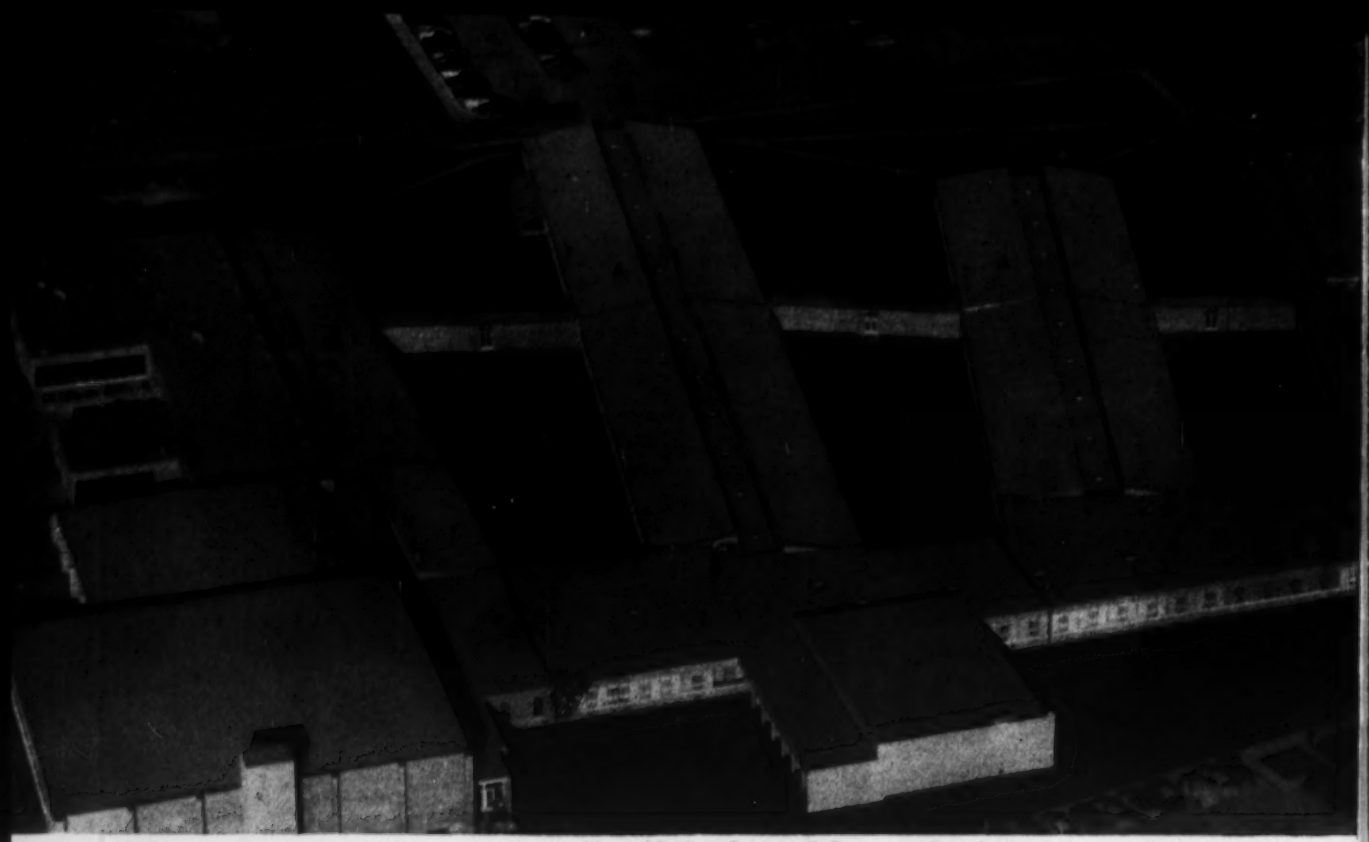


assembled span. Side spans are 60 ft long, center span 80 ft. Ballast, ties and rails also were placed before the move.

2. At eleven pm on Saturday, train service was halted and the contractor began removing old track and excavating fill. Rains had softened the ground and the jack pad bearing had to be strengthened, but twelve hours later the new sections were being placed.

span is in its final position, while center and west spans are still on rollers. Center span was positioned second, the west last.

5. With excavation of fill complete, old bridge (arrow) awaits removal. American Bridge erected the steel, Horn Construction Co., Inc. did the general construction work under direction of Long Island Railroad engineer Donald E. Dana.

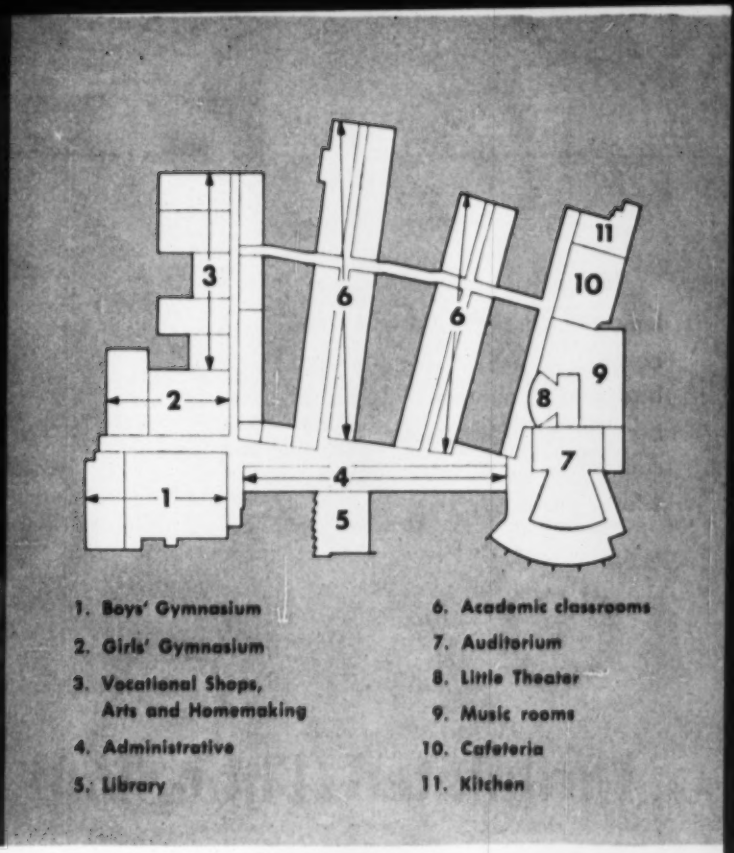


SENIOR HIGH SCHOOL, GRAND ISLAND, NEBRASKA. *Architect:* McNett, Stanage & Company, Grand Island. *General Contractor:* H. S. Holtze Construction Company, Sioux City, Iowa. *Steel Fabricator:* Paxton & Vierling Steel Company, Omaha, Nebraska.

Functional, economical "finger plan" of Grand Island

THE STRUCTURAL STEEL FRAMEWORK NEARING COMPLETION. Starting date for the school was October, 1953, and it was completed in July, 1955. Total cost of the school was $2,622,795.00.

UNITED STATES STEEL USS



1. Boys' Gymnasium
2. Girls' Gymnasium
3. Vocational Shops, Arts and Homemaking
4. Administrative
5. Library
6. Academic classrooms
7. Auditorium
8. Little Theater
9. Music rooms
10. Cafeteria
11. Kitchen

High School *again illustrates versatility of Structural Steel!*

The basic design of the new senior high school in Grand Island, Nebraska, consists of four "fingers," or wings, containing classrooms, radiating from a main administrative area. The "fingers," which extend toward the west, are oriented at slightly different angles from each other in order to secure the best lighting and ventilating situations. And, in addition to being connected to the administration area, each "finger" is joined to the others by means of a corridor—for quick passage from one wing to another. The school is sized to accommodate approximately 1,400 students. All areas are of one-story construction.

The unique building houses two gymnasiums, one of which will seat 2,600 spectators for varsity basketball games. The main auditorium will accommodate 1,500 people comfortably, and the Little Theater can seat 300. In both, stages are equipped to handle even the most intricate of productions. The ultramodern cafeteria, which turns out 600 to 700 meals with ease during the short lunch period, may be converted quickly into a study hall through the use of motorized rolling doors. The whole effect of the school is one of efficiency coupled with luxury. Yet, it was built at a cost of only $10.96 per square foot.

Approximately 1,017 tons of Structural Steel were used in the framework of the new building—contributing greatly to the economy of construction. As is usually the case, when economy must go hand-in-hand with imaginative architectural ideas, Structural Steel is called upon. And why not? Structural Steel is versatile. It's the strongest, most economical of load-carrying materials—effectively resists tension, torsion, compression and shear. Once enclosed in buildings, it lasts indefinitely, requiring no maintenance.

Structural Steel may be riveted, bolted or welded, and may be erected in any weather. And since steel members are fabricated indoors, weather can have no effect on the quality of workmanship. For further details, return the coupon.

USS STRUCTURAL STEEL

UNITED STATES STEEL CORPORATION, PITTSBURGH
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Send for this detailer's handbook now!

United States Steel Corporation
525 William Penn Place, Room 2801
Pittsburgh 30, Pennsylvania

Please send me a free copy of **Hot Rolled Carbon Steel Shapes and Plates,** *containing weights, sizes, and dimensions of the complete range of structural materials.*

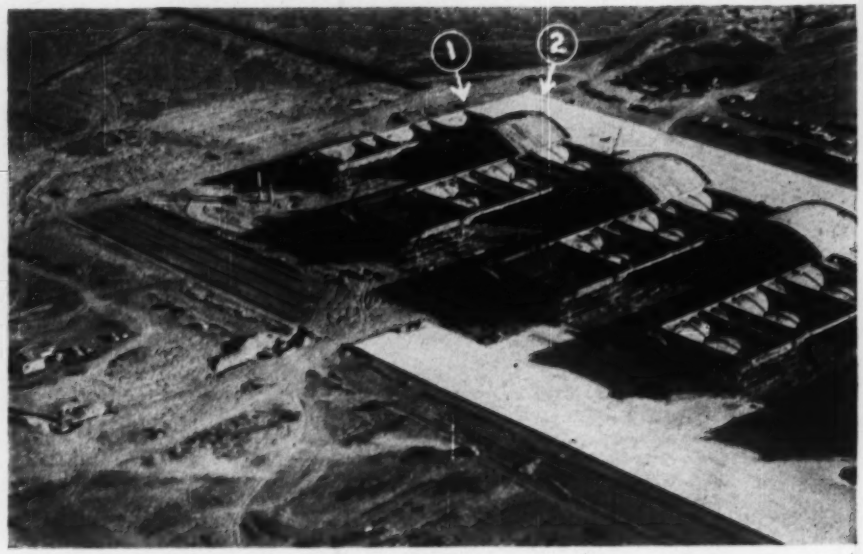
NAME .....

COMPANY .....

ADDRESS .....

CITY ..... STATE .....

Unusual concrete hangar roof consists of successive low and high-bay thin-shell barrel arches, with long-span arches supported on prestressed cantilever girders.



THIN-SHELL ROOF of a hangar at Moses Lake, Wash., was concreted in this order:

Undulated Thin-Shell Hangar Roof Spans

Like ocean swells, a thin-shell concrete roof curves up and down, providing large areas unobstructed by columns in an 8 plane hangar under construction at Larson Air Force Base, Moses Lake, Wash. Though the shell is only 3 in. thick, it spans bays as large as 217 x 66 ft.

The $5.8 million Boeing Airplane Co. hangar is 1,068 ft long and 372 ft wide. It is designed to accommodate the B52 Stratofortress and KC-135 jet refueling tanker being produced by Boeing at Seattle and flown to Moses Lake for testing and delivery to the Air Force. The B-52, larger of the two Boeing planes, has a minimum wing span of 185 ft and a tail 48 ft high.

Eight covered work positions are provided in four stalls. Each houses two of the huge aircraft, which will enter frontward from opposite sides of the building and be parked nose to nose.

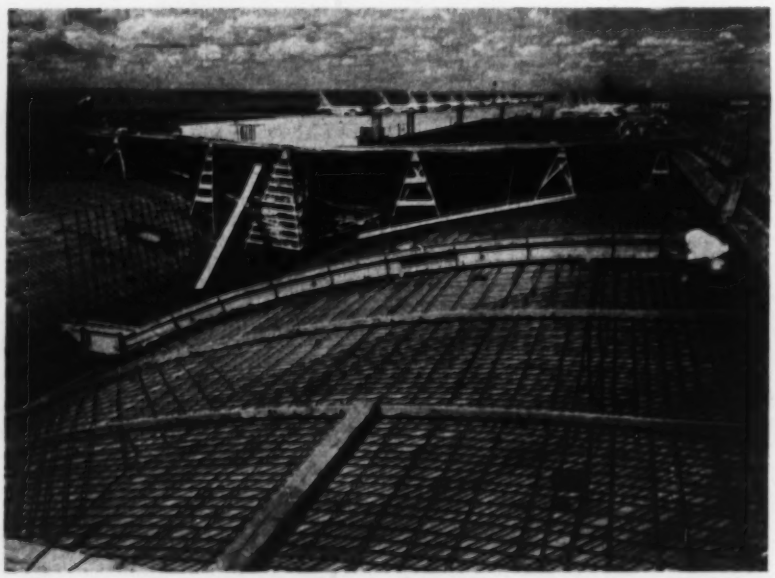
• **Little waste space under roof**—It was necessary to provide overhead clearance that would permit the planes to enter and move through the stalls without lowering the tail. This presented a problem of prohibitive cubage if such a height were maintained throughout the structure. The roof design adopted provides a 3 in. thick barrel arch over each of the four stalls with a clear height at midspan of 63 ft, flanked by a series of arches at a lower level. Stiffened transversely at 66-ft intervals by arched ribs, the high-bay thin shells span 135 ft. But there are no columns along their edges; they are supported at four points—on the ends of 40 ft cantilever girders—40 ft above the hangar floor.

The edges of the arches are stiffened by 8x48 in. concrete beams. These are separated by a 2 in. expansion joint from thin-shell arches over the low-bay portions of the hangar.

In the direction perpendicular to the 135 ft arch span, the roof is composed of four units. Each unit consists of a typical 66 ft bay between 32 x 24 in. stiffener ribs and two 16 ft cantilevers. (There also are 9½ x 18 in. stiffener ribs midway between the main stiffeners.

A 1 in. expansion joint separates the units.

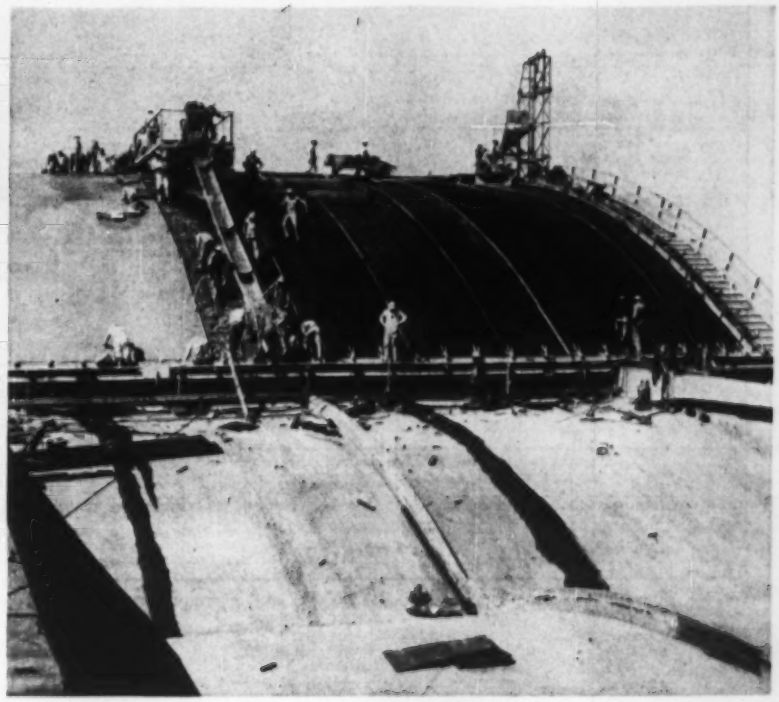
The low-bay roofs that flank the big arches are 130 ft wide. But these 3 in. thick shells are supported on only two rows of columns 50 ft apart, the outer shells cantilevering 40 ft to the edges of the 135 ft arches. The result is a total unobstructed distance between col-



REINFORCING for arch shells was laid on diagonals as well as parallel to the axis.

(1) low-bay arches, girders; (2) high-bay arches.

Big Bays



CONCRETING for the high bay was carried out from a rolling platform on the arch crown, which was connected with a mobile steel tower that hoisted the concrete.

umns of 215 ft in the stalls sheltering the planes.

Maximum clear height between the 25 ft high columns in the low bays is 30 ft.

• **Thrust absorbed at hangar ends**—End bays incorporate heavy concrete rigid frames with footings designed to take the thrust imposed by the roof loading. The thrust is carried to the ends of the hangar through deep prestressed concrete girders that project above the low-bay arches at 66 ft intervals, along the column lines.

Cantilevering 40 ft beyond the columns, the girders also support the 450 ton weight of the high-bay arches.

• **Pins connect arches**—Heavy steel plates at the ends of the girders serve both as bearings for anchoring the tendons that post-tension those members and as bearings for steel-pin connections with the high-bay stiffener ribs. Thus, the shear and thrust are transferred from the high-bay arches to the girders through four 6 in. dia steel pins.

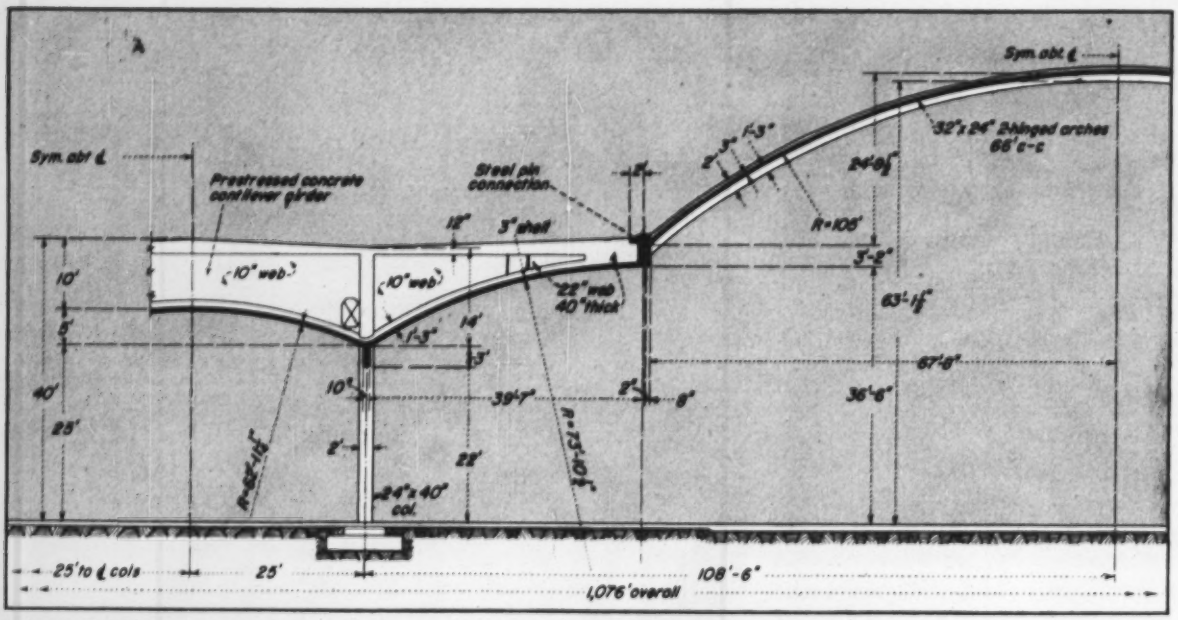
Masonry walls along column lines enclose the low-bay areas, which will be used for shops.

FALSEWORK on wheels supported forms, which were raised and lowered by 45 jacks.

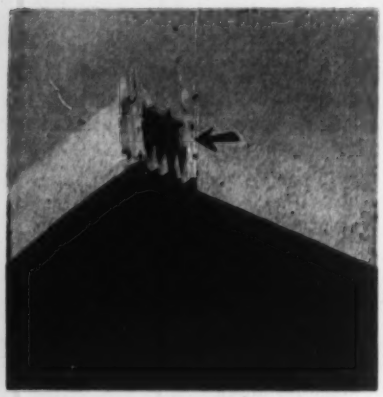
• **Doors clean their tracks**—Each of the four airplane bays will have steel sliding hangar doors at both ends. Parallel trackage for the door leaves is canted out at the center, providing an extra clearance of 6 ft at the airplane tail.

The bottom track is a steel channel embedded in the floor paving, with the top flush. The opening is only 1¼ in. wide. Door wheels will roll inside the channel, preceded by a metal outrigger (like a locomotive "cow catcher") that pushes debris ahead and into a collection chamber. The design is expected to avoid the usual difficulties of depressed tracks, where the walls break down under traffic.

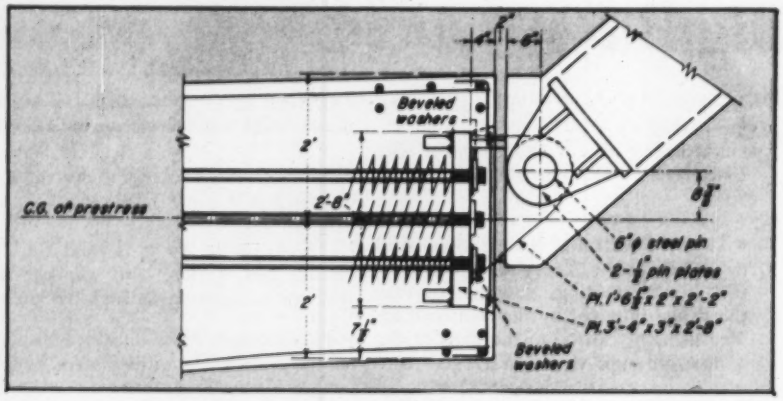
• **Construction procedure**—In constructing the hangar roof, the contractor concreted low-bay shells and girders before the high bays. Timber forms, lined with plywood and supported on timber falsework braced with steel tie rods, were fabricated for the five low-bay units along the length of the hangar. While



CROSS SECTION shows 40-ft prestressed cantilever girders supporting the high-bay arches, providing a 215-ft clear span.



PIN PLATE at girder end (arrow) doubles as prestressing anchorage.



PIN CONNECTION carries the weight of the high-bay shell to a prestressed girder. These pins are located at the ends of two arch stiffeners.

concreting operations were carried out for these shells, forms for the high bays were erected. (All forms were re-used for the rest of the units.)

After the low-bay concrete attained sufficient strength, twenty-four 1¼ in. dia high-strength steel bars sheathed in each girder were tensioned in pairs. Two 50 ton jacks applied the prestress at both ends. Under a total force of 950 tons, the bars stretched 4½ to 5 in., and the ends of the cantilevers rose free of the forms.

Timber centering also was used for the high-bay units. Concreting of these shells was expedited by use of a 12 x 78 ft rolling platform mounted over the crown. The platform's wheels moved between 2 x 4's on a builtup bracket. From the platform, a runway extended to a 90 ft high mobile steel tower that was used to bring concrete up from ground level.

Concrete was delivered to the forms in 6 cu ft buggies, which dumped directly into the forms or into a sheet-metal lined chute 30 ft long at each end of the platform.

Each unit, with from 220 to 380 cu yd of 4,000 psi, high-early-strength concrete, was completed in a continuous pour. From three to seven days were allowed to elapse before the forms were moved.

To avoid tilting the girders when the weight of the high-bay shells were transferred to them, the high-bay forms were not lowered until all those arches in one line had been concreted and cured sufficiently. Then, the forms were lowered uniformly.

Forms for each of the four units were supported on 45 jacks, to which 18 men were assigned. At a signal, the 72 men lowered their jacks ¼ in. The lowering continued until all four shells were down 1¼ in., the deflection of the whole roof section, and resting on the pin connections The forms then were rolled to the next line of units.

An alternative bid was taken in structural steel with the same area and roof configuration. With the steel bid only about $14,000 lower, the concrete was accepted for reasons of lower maintenance and higher fire resistance.

This project, known as Package 8, is a continuation of Boeing's Moses Lake Flight Center construction, first increment of which was begun in the middle of 1954. The hangar is expected to be completed next August.

Naramore, Bain, Brady & Johanson, architects-engineers, designed it and supervised construction. Engineering consultants included Worthington & Skilling, structural; Bouillon & Griffith, mechanical; Duffy, Lawver & Kumpf, civil. General contractor for the hangar and balance of Package 8 work is Howard S. Wright & Co., Inc. All are Seattle firms.

LAPIDOLITH HAS CASE-HARDENED FORD MOTOR'S CONCRETE FLOORS FOR OVER 40 YEARS!

Since their original order in 1915, Ford Motor Company has hardened millions of square feet of concrete floors with LAPIDOLITH

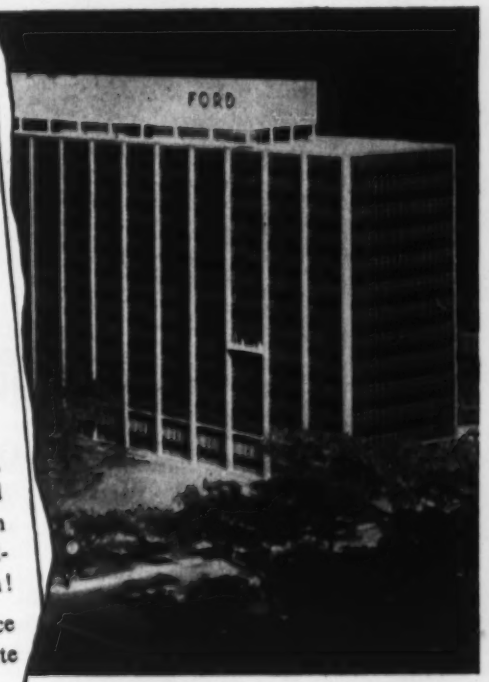
The powerful hardening action of Lapidolith makes concrete floors harder and more dense to prevent their crumbling and dusting under wearing action!

Only one inexpensive treatment is necessary, because liquid Lapidolith penetrates deeply into concrete to harden in *depth* as well as on the *surface*.

LAPIDOLITH—the concrete hardener backed by a bonded guarantee!

When floors are Lapidolized according to specifications, L. Sonneborn Sons, Inc. makes available a Bonded Guarantee (backed by the National Surety Corporation of New York)—assurance that concrete floors are hardened and will not dust or crumble under wearing action!

Architects, Builders, Contractors and Maintenance Engineers are urged to get the facts on Lapidolith. Write today for more information.



FORD'S NEW CENTRAL STAFF OFFICE BUILDING, Dearborn, Mich.

A Product of **Sonneborn** RESEARCH

Makers of Hydrocide Colorcoat
Hydrocide S•X Colorless
Hydrocide Dampproofings

MAIL COUPON FOR FURTHER INFORMATION

L. SONNEBORN SONS, INC.
Building Products Division Dept. E-3
404 Fourth Ave., New York 16, N. Y.

Gentlemen:

We are interested in more information on the concrete hardening properties of Lapidolith.

Architect ☐ Builder ☐ Contractor ☐ Maintenance ☐ Dealer ☐

Name_____

Company_____

Location_____

City_____ Zone_____ State_____

SWAMP ALLEY—nickname given to the 68 mile Acadian Thruway. Surveyors are plotting route that will require 6 bridges and 18 mi of trestle to cross the Atchafalaya floodway.

ROUTE links Lafayette, Lutcher; would cut 50 miles off present route to New Orleans.

Financing Blocks Louisiana Road

Two days before the scheduled opening of bids for Louisiana's Acadian Thruway, project engineers requested an indefinite postponement, pending the outcome of financial studies now under way.

No total estimated cost has been made officially, but in talking of the project, engineers place the figure at about $100 million. Selling revenue bonds has been difficult and backers of the new road now are exploring the possibility of getting the project included in the federal highway program.

The thruway, dubbed "Swamp Alley," will link Lutcher–40 miles west of New Orleans–with Lafayette, on U. S. Highway 90. Crossing some of the most forbidding terrain in south Louisiana, it will cut approximately 50 miles off the present route between New Orleans, Lafayette and points west.

The expressway will include 25 miles of bridges and trestles, 43 miles of roadway and will be served by overpass and interchange structures. Two 24 ft roadways will be separated by a 40 ft median strip.

A contract for bridge superstructures was awarded to American Bridge Co. in May of last year on a low bid of $31,998,500.

Bids that were to be opened Jan. 16 covered the entire roadway work with the exception of the American Bridge contract. Contracts were to cover construction of the roadways, floodway trestle substructures for the Bayou Teche, West Levee, Lake Rond, Chicot Pass, East Levee and Mississippi River bridges. Included were minor bridges, overpass and interchange structures, drainage structures, administration buildings and toll booths with equipment and communication systems.

The American Bridge superstructure contract included construction of decks and appurtenances for the Bayou Teche, West Levee, Lake Rond, Chicot Pass, East Levee and Mississippi River bridges. One bridge crossing the navigable Atchafalaya River has not as yet been included in any bid.

• **Swamp crossing**–Eighteen miles of the thruway across the Atchafalaya floodway would be of trestle construction similar to that of the Lake Pontchartrain Causeway. This elevated road through the swamp is planned as a 4 lane structure divided in the center by a raised 4 ft wide concrete strip.

Largest of the six major bridges would be that over the Mississippi River at Donaldsonville: a 4 lane cantilever type with a horizontal clearance of 750 ft and a vertical clearance of 133 ft. With its approaches the bridge will be 9,102 ft long.

The Bayou Teche crossing was to be twin single-leaf bascule bridges. The West Levee bridge will be a 4 lane simple truss span and the Lake Rond crossing a twin double-leaf bascule bridge. A 4 lane cantilever span will cross Chicot Pass and the East Levee.

In charge of the thruway is the South Louisiana Turnpike Commission, whose members represent the five parishes (counties) that the new highway will serve.

Cost-Saving Drill Platform Features Maneuverability

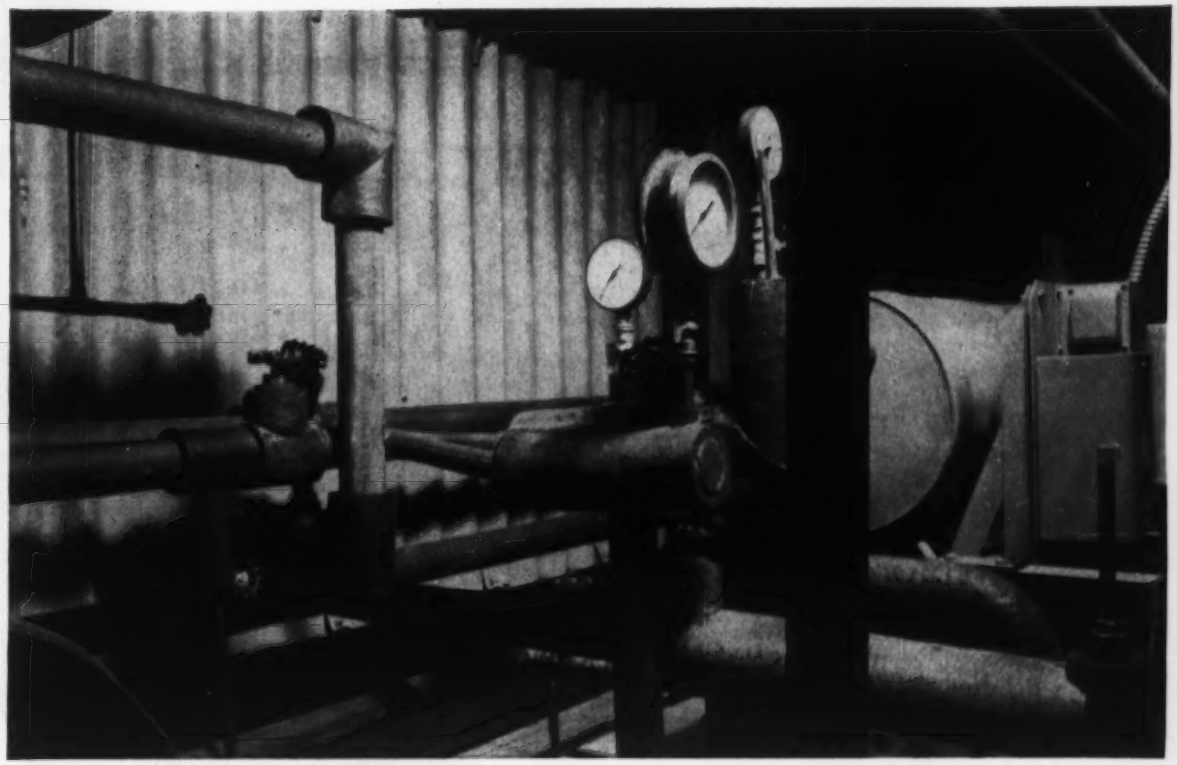
A new offshore drilling platform, said to be radically different from anything yet seen, has been developed by R. G. LeTourneau, Inc.

Deepwater Exploration Co. of Houston has awarded LeTourneau a contract to build the "combination-type" platform at a cost of more than $1.5 million.

It is said that the new platform will answer the industry's need for a rig to drill medium depth holes (about 5,000 ft), and for cleaning out older wells. This unit, on completing one job, can be lowered to the water, floated to a new work location, then raised again on electrically-powered legs–all within a period of several hours.

Features leading to lower operating costs include: the ability to skid the entire derrick, drawworks, and substructure (all as one unit) off onto a fixed platform for workover (cleaning out) purposes, then back to their original position on the mobile unit's deck; the ability to shift the substructure, including derrick and drawworks, laterally for ease in servicing multiple wells, or for ease in final adjustment over a proposed location. Two wells can be drilled from the same location, by lateral shifting of the drilling machinery over a 26-ft-wide deck slot. The platform houses eqiupment, machinery, drilling supplies and crew quarters. It can drill to a maximum depth of 10,000 ft.

The overall length of the triangular platform is 121 ft, its hull is 12 ft deep. The maximum imposed load with platform in fixed position, including derrick line pull, is 1.5 million lb and the elevating rate of legs with spud tanks is 12 in. per minute.



Intricate piping in confined space can be insulated easily with Armstrong Armaflex. Extreme flexibility simplifies handling, reduces application time as much as 50% when compared with wrap-on type coverings.

Stop condensation on fluid cooling lines with this new insulation

You can stop condensation on commercial and residential air-conditioning lines with Armstrong Armaflex®. This new, foamed plastic pipe insulation completely seals out moisture and air. No separate vapor barrier is needed. Armaflex remains dry in service, so its low K-factor of 0.28 at 75° F. stays low for the life of the installation. This insulation also will withstand 200° F. on hot lines or during the heating cycle on dual-temperature lines.

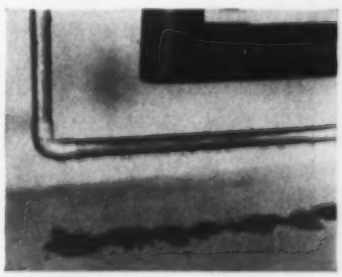
Armaflex is remarkably flexible, can actually be tied into knots. This great flexibility can speed installation. Slipped over pipes or copper tubing, Armaflex follows contours readily without any special cutting or fitting. If lines are already in operation, Armaflex is simply slit lengthwise, snapped in place, and quickly sealed with cement.

Armaflex is clean to work with—will not chip, crumble, or rub off. Waste is negligible. It will not support combustion, is safe to install before sweat fittings are made. Armaflex comes in 6′ lengths, for all sizes of pipes and tubing from ¼″ up to 3⅛″ o.d.

Send for free booklet giving full details on this amazing new insulation. Write Armstrong Cork Company, 3003 Wallace Street, Lancaster, Pa.

Armstrong

INDUSTRIAL INSULATIONS

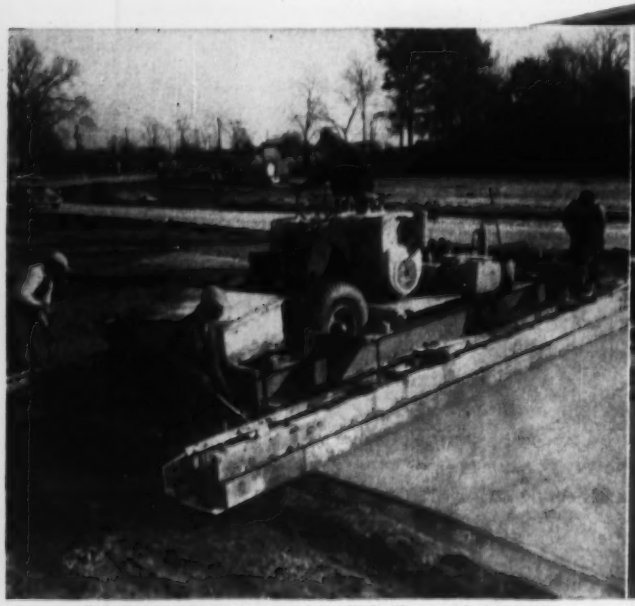


Prevents condensation when used within recommended temperatures and humidities. Cellular composition of Armstrong Armaflex seals out air and moisture, eliminates need for separate vapor barrier coating or finish.

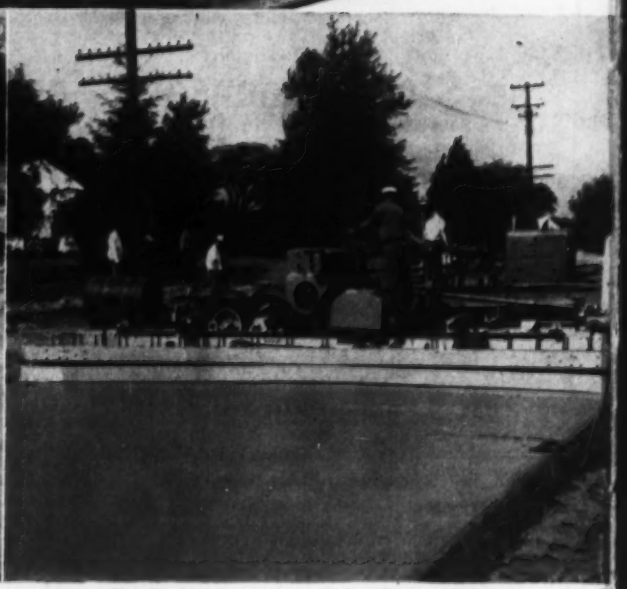
Fast, easy fabrication of fitting covers is accomplished by miter-cutting pieces of Armaflex and cementing them together with Armstrong 520 Adhesive.

POWERED-WIDENING plus ...puts you way ahead with

Four Rex Powered-Widening Finishers assure the right size for your jobs: 10'-15', 12'-18½', 20'-25', 20'-32'. Also Model 5000 Lightweight Finisher for street paving.



Rex Concrete Finisher at work on U. S. 40 out of Indianapolis.



Cleveland job is speeded with Rex Concrete Finisher.

THE COMPLETE ROAD BUILDERS' LINE includes Rex Pavers, Paving Forms, Subgrade Planers and Testers ...Truck Mixers...Pumps...Railporter...Pumpcrete. Check coupon for complete illustrated literature.

CONSTRUCTION REX MACHINERY

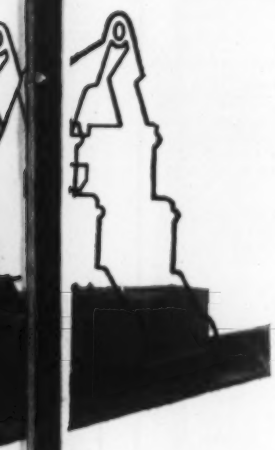
PAVERS • SPREADERS • FINISHERS • FLOATS • CURING MACHINES • FORMS

CHAIN BELT COMPANY

MOTO-MIXERS • BUILDING MIXERS • PUMPCRETE • RAILPORTER • PUMPS

FULL PORTABILITY

REX® Concrete Finishers



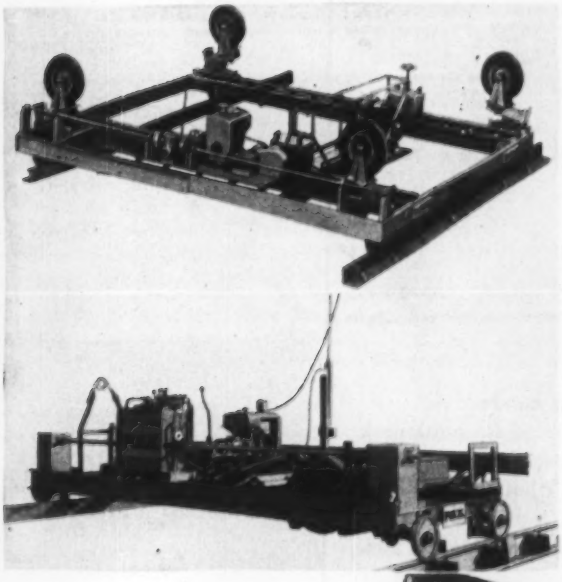
High speed...high capacity...and *highest* in operating advantages, these are your immediate rewards with Rex Concrete Finishers.

They have instantaneous powered-widening...right during operations. Width changes are made non-stop for tapered slab and interchange work. For straight lane work, you're also time ahead. They adjust to the right form size in moments.

Rex Powered-Widening is today's most advanced and trouble-free principle. With exclusive double-action design, *both* main frames are powered out or powered in *together*. It's a perfectly synchronized, foolproof system with positive, smooth chain, sprocket and rack operation. Its single lever is fast, easy.

Alone, Rex Powered-Widening is a finisher advantage that performs time-saving wonders. But note all the major work benefits of Rex Finishers...and you know why these modern, high-speed finishers are preferred by today's busiest contractors:

- **Easy-traveling portability...dual rubber-tire transportation wheels are hydraulically lowered, self-locking.**
- **Biggest screeds...16″ front and rear...hydraulic up-down operation.**
- **More speeds...fastest operation of all, full 110′ per minute travel speed. 6 forward, 6 reverse, 4 screed speeds...total 24 working combinations.**
- **Better balanced design with biggest channel frames (15″ members)...absolutely no side sway, weaving...no rocking of the forms.**
- **Smooth efficiency...ball and roller bearings used throughout...no bushings.**
- **All these advantages plus Powered-Widening with power on *each* main frame. No concentrating of action on a single point...no twisting, binding, etc.**



PROFIT FROM REX POWERED-WIDENING ON THESE BETTER PERFORMERS, ALSO...

Rex Float Finishers

The only longitudinal float finishers with the double-feature benefits of 2 engines...one sized right for form and float travel and the other for float reciprocation. Better finishing at a faster rate. Available with powered-frame widening and transportation rig.

Rex Automatic Curing Machines

Here's the fast operating speed that assures perfect curing jobs under the worst conditions, even on very hot, windy days when concrete is fanned dry fast. It can step up its speed 5 times the normal rate and actually overtake the paver. Powered-frame widening and transportation rig available.

get yours!

Bring yourself up to date on the industry's most complete and modern line. Mail coupon for these new, informative bulletins.

CHAIN BELT COMPANY
1635 West Greenfield Ave., Milwaukee 1, Wis.
Please forward literature which I have checked:
☐ Rex Finishers ☐ Rex Float Finishers ☐ Rex Automatic Curing Machines ☐ Rex Subgrade Planers and Testers ☐ Rex Pavers ☐ Rex Truck Mixers ☐ Rex Pumps ☐ Rex Railporter ☐ Rex Pumpcrete ☐ Rex Road and Airport Forms

Name.....

Title.....

Company.....

Address.....

City.....*Zone*.....*State*.....

LET THIS ACTUAL JOB REPORT GUIDE *YOUR* PLANNING FOR THE COMING ROAD PROGRAM

JERSEY SPREADER

REG. TRADE MARK

HERE'S WHAT J. B. MICHAEL & CO., INC. PLANNED IN 1955 . . .

THIS IS HOW IT WORKED OUT . . .

AN EXCERPT FROM THE EDITORIAL COLUMNS OF A NATIONAL PUBLICATION

J. B. MICHAEL & COMPANY, Inc.
CONTRACTORS
PLANT AND OFFICE, WALKER AND HEYWOOD STREETS
P. O. BOX 8886 – PHONE 8-8139
MEMPHIS 4, TENNESSEE

Humboldt, Tennessee
December 22, 1955

Tractor Spreader Company
630 Terrace Avenue
Hasbrouck Heights, N. J.

Gentlemen:

We purchased two of your Jersey Spreaders for laying approximately 800,000 tons of stone base on the West Virginia Turnpike in 1954. These spreaders were used in 1955 for laying base and insulation course on the Kentucky Turnpike.

The performance of this equipment has been entirely satisfactory. I notice that you have made some changes at several places on the spreader which will make the spreader sturdier and tend to lay a more uniform spread.

We have on several occasions been able to run 1,000 tons per hour through these Jersey Spreaders.

We have approximately 1,800,000 tons of base to lay on the Kansas Turnpike and plan to average a 1,000 tons per hour on each spreader that is in operation. We are purchasing another Jersey Spreader for this season.

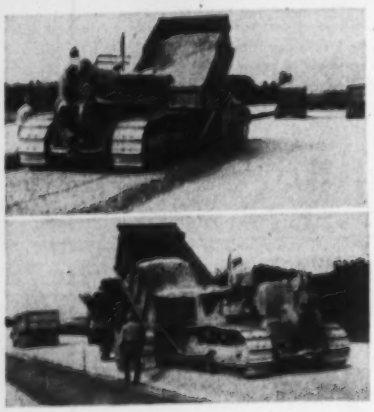
Assuring you again that we are well pleased with the performance of this equipment, we are,

Very truly yours,

J. B. MICHAEL & CO., INC.

J. A. HADLEY

JAH/fb



Too close for comfort? — What appears to be bottleneck at Jersey Spreader (six trucks waiting, top photo) is relieved in less than ten minutes (bottom). Trucks hauling in 2-in. minus stone are emptied in 50 sec. J. B. Michael & Co., Inc. working three spreaders, places 20,000 tons a day! Each spreader marches a mile a day.

FOR MORE INFORMATION ABOUT THIS TIME-SAVING, COST-CUTTING METHOD . . . WIRE, WRITE OR PHONE:

TRACTOR SPREADER COMPANY
HASBROUCK HEIGHTS, NEW JERSEY

Trees and Water:

Tree rings are a faithful record of tree growth. And water is a major influence on this growth. How can we establish . . .

Rainfall Histories from Tree Rings?

Nathan A. Bowers
Consulting Editor
Engineering News-Record

(Since retirement after forty years on Engineering News-Record's editorial staff, mainly as Regional Editor in San Francisco, the author has spent much time studying dendrochronology in western forests and in his own tree-ring laboratory in Atherton, Calif. He has authored "Cone Bearing Trees of the Pacific Coast", which in its fifth printing, recently issued, has a new chapter on tree ring analysis.—Editor.)

In wall panels of natural-wood finish, the beautiful grain designs nature has traced adds interest because no two are exactly the same. Like Bertillion prints, each has individual characteristics. But these decorative patterns of endless variety resolve themselves into definitely repetitive and easily measurable form if we examine the **end** grain of the wood.

Changing the viewpoint by ninety degrees brings about a transition, as it were, from the artistic to the scientific.

This end grain or cross section of the tree can be given laboratory treatment to produce a highly polished surface without damage to cell structure. A microscope then reveals that the sequence in cell formations is highly significant as a faithful record of tree growth. When we get this far we are moving rapidly toward the intriguing study of tree rings, which can be anything from a hobby to a full-time scientific pursuit.

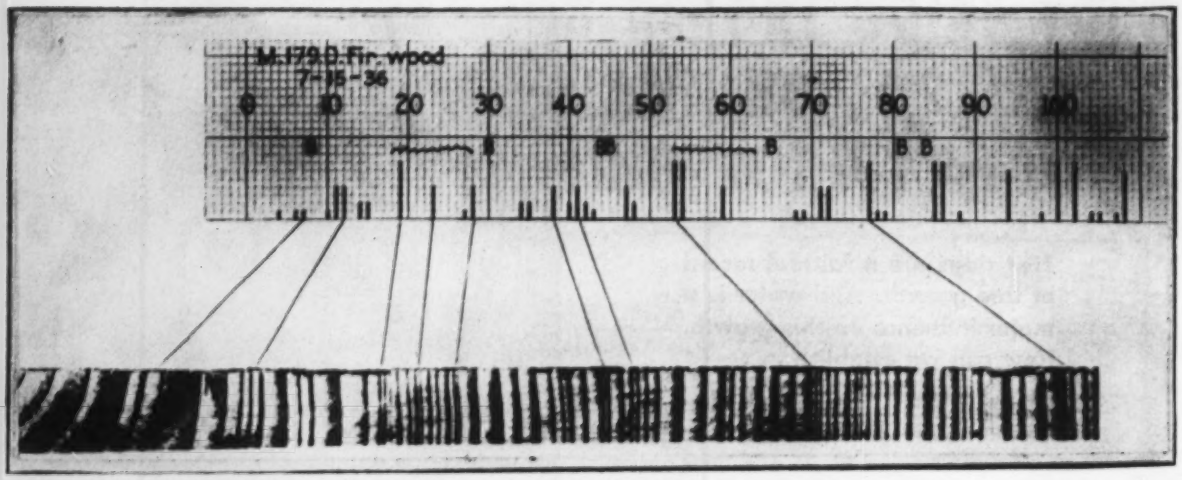
Recent advances in this science have opened up a new and useful source of historical data. What can be proved in court by tree rings has become important evidence in litigation over boundary lines where corners were referenced to blazed trees. A still more important field is that of climatic history, particularly rainfall. In this direction there has been much encouragement for further study but the science is still young; it should not be exploited beyond reasonable limits; and it can be harmed by sensationalism.

• **Young science**—Curiously enough, early attention to tree rings as indicative of the climate, stemmed from astronomical studies. About 1909, A. E. Douglass, as part of his work on sun-spot cycles, turned to aged trees in search of rainfall data earlier than man-kept records. Since then much has been learned, there have been many improvements in techniques and the significant point today is the encouragement for more comprehensive research.

Unfortunately, even the experts cannot obtain data useful in long-range climatic study from just any tree that happens to be handy. In some areas it is likely that **none** of the trees bear indications that would reveal rainfall variations. On the other hand, when the tree used is from an area where study has shown the partial control of tree growth by rainfall, the indications to be had from ring variations may be highly informative. Such trees are found in semi-arid country or near the boundaries marking the edges of an area in which the particular tree species can live. These boundaries may be those imposed by altitude, exposure to dry, desert conditions or other limiting factors. Trees of this type are sometimes called "sensitive." Of course, all trees are sensitive, but some can be "read" or interpreted and some can not.

• **Has its limitations**—While the rings are a faithful record of a tree's growth, it remains for the analyst to "read between the lines" as it were, to learn **why** growth occurred as it did. A score of factors can affect the growth rate: a mere core may be misleading if it contains multiple rings (in any one year) not distinguishable from the others and any core or even a complete cross section (transect) from the trunk is of little value if nothing is known of the location and environment that influenced the growth recorded in the rings.

In short, if we are to single out the influence of rainfall alone and separate this from all other growth factors, the first requirement is to find a tree whose growth has been responsive to rainfall variations. Trees growing in close proximity to any continuous source of moisture obviously can reveal but little about rainfall. Similarly, trees making a readable record of rainfall will not be found in locations (1) **to** which there is surface or subsurface drainage from slopes above or (2) **from** which drainage is poor or irregular, (3) where the tree is in competitive association with others or (4) on exposed ridges where



TREE-RING ANALYSIS—Growth rings are charted for easy ring trait study.

winds and storms could confuse the indications left by rainfall variations.

These and other limitations make the whole subject of ring variability one to be carefully studied. Nevertheless, it is true that with adequate environmental data, properly handled specimens from rainfall-responsive trees can yield characteristics in ring sequences which will check more or less closely with those from other trees responsive to the same variations in moisture supply.

When the tree to be examined has been selected, the next step is to bring to the laboratory a sample, taken across the grain, of the successive evidences of growth formed as the tree passed through its seasonal changes.

• **Taking specimens**—Two methods of sampling are in vogue: 1) taking an increment core boring, which does not harm the tree, or 2) taking a cross section (or transect) through the trunk which, of course, destroys the tree. The only commercially available tool for taking cores from living trees is the imported Pressler increment borer, made in Sweden. In this country it is widely used to determine rates of tree growth and for sampling piling suspected of marine borer damage.

This tool has the serious limitation, for tree-ring study, at least, that it takes only short cores—maximum core lengths are little more than a foot. For adequate study of large trees much longer cores are needed.

Pioneer work in experimenting with tools to take longer cores was done by the Los Angeles Department of Water & Power when the Owens Valley watershed was developed. These borers were built to get any information tree rings might yield about rainfall prior to man-kept records. They were hand-operated by two men and could take ⅝-in. cores almost 6 ft long from trees of soft-wood species. But they were not suitable for dead wood nor the tough, dense-grained wood of high altitude junipers and similar slow-growing species.

Attempts to develop a power-driven, tree-coring tool have been discouraging until recently. It is now expected that a new type of tool, soon to be available, will be able to core to the center of the largest trees as well as in the hardest wood. If and when this aim is achieved age determinations will be more definite and long, continuous cores from our oldest trees will greatly facilitate study of tree-ring patterns.

If the tree to be studied can be cut down, as where logging operations are under way, one or more complete transects of the trunk afford best prospects for most complete data. In working with transects, especially where the diameter is large or many are to be examined, hand polishing methods are impracticable. But once the surface is ready for the compound microscope (a high polish is essential in the close-grained woods), every individual ring and the variations in its cell structure can be followed throughout the entire periphery.

Such study of complete transects has been facilitated by recent development of mechanical methods and equipment for putting this high polish on cross-grained surfaces without damage to cell structure which must be left undisturbed.

The first heavy machinery specially equipped for this work was installed in May, 1956, in the Tree Ring Research Laboratory at Macalester College, Saint Paul, Minn.

• **Laboratory methods**—When the specimen, whether core or transect, is ready for analysis, ring widths can be measured and the measurements tabulated for comparison, or significant indications in ring sequences can be plotted on a chart to be compared with charts from other specimens. In either method, emphasis is placed upon search for thin, extremely thin rings. Significance attaching to a ring varies inversely with ring thickness.

Thinnest rings are plotted on the chart as the longest lines, moderately thin rings as shorter lines, and so on (see chart). Where there are thin ring sequences which correspond, this will be apparent at once on comparison of the charts. Where 80% or more of the significant indications correspond, the two specimens are said to have been "cross dated." In this way the dating of rings is carried back for long periods (see sketch).

• **How accurate is the science?**—Only minor climatic changes can be recorded by tree rings. Major changes cause forest migrations and a more or less complete change in flora—e.g., spruce-to-pine-to-oak as a climate becomes drier and warmer. Before migrations result, lesser changes are reflected in growth-layer patterns, of course, but such changes involve a whole constellation of factors, complex and interacting.

The thickness of a ring (amount of xylem formed) in any given growing season will be heavily influenced by soil moisture. But from rainfall to xylem is a long and tortuous course with many involvements: rainfall, seepage, retention, absorption by root hairs, sap stream, distribution for photosynthesis, photosynthesis, distribution of result and sugars, presence in proper proportion of other materials and then finally, deposition of xylem.

Each of these successive stages is subject to interruptive factors, any one of which could effect the end result. Other elements must also be considered. An example: light rains closely spaced have more influence on growth than heavy rains widely spread. Again, unseasonal rains may fail to register in a ring

10 LEADS TO BETTER, and BIGGER *FASTER RESULTS* PROFITS!

MACADAM Ddensification. The Jackson Multiple Compactor consolidates granular soil sub-bases and base courses of sand, gravel, rock or slag in half the time required with equipment of other types.

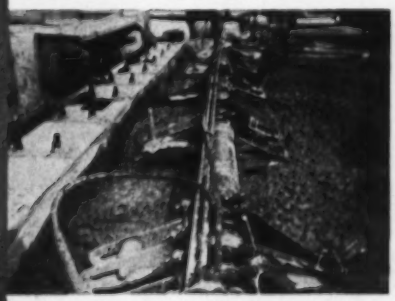
PAVEMENT WIDENING. The Multiple Compactor can be quickly converted to provide in ONE PASS 100% of required density in granular soil sub-bases and rock courses in any widening project.

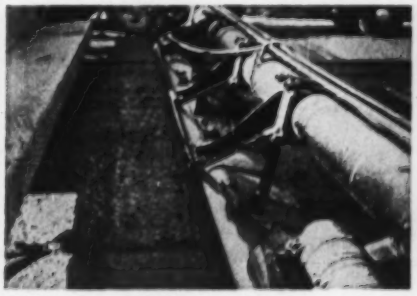
GRANULAR SOIL FILLS. The Multiple Compactor quickly achieves specified density, gets into places bigger, more expensive equipment cannot reach. Individual units can be detached, operated as manually guided compactors.

SOIL COMPACTION. Self-propelling, the JACKSON COMPACTOR, with 12" to 26" interchangeable bases, achieves specified density of granular soils in 8" to 10" depths at 2000 sq. ft. per hr. Perfect for bridge and pipe line fills, concrete floor sub-bases, etc.

BLACKTOP WIDENING & PATCHING. The same machine operated from power plant on auto-trailer with pickup for Compactor is most efficient means of blacktop pavement patching, paving walks, drives, etc. Will compact up to 2000 sq. ft. per hr. close to maximum density.

TWIN-UNITS — ONE OPERATOR. With a two-unit, side-by-side or tandem hookup of JACKSON COMPACTORS, one man can readily do the work of two, since the compactors are self-propelling and he has only to guide them.





CONCRETE VIBRATION FOR HIGHWAY AND AIRPORT PAVING

INTERNAL TYPE; super-powered, gives full width internal vibration through full depth of very thick slabs. Saves time, cement; provides greater density and compressive strength.

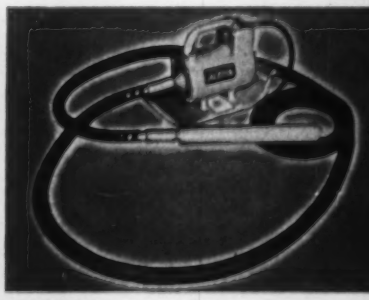
SURFACE TYPE; does perfect job of vibrating all mixes in depths used on highway projects. The owner of a JACKSON Paving Tube can quickly switch from internal to external vibration, or vice versa, at minimum expense.

MUNICIPAL PAVING: This vibratory screed strikes off to all crowns, undercuts at curb or sideform, works right up to and around obstructions, is rolled back for second passes on 4 rollers. Most productive and convenient screed made.

FOR SALE OR RENT
AT
YOUR *JACKSON DISTRIBUTOR*

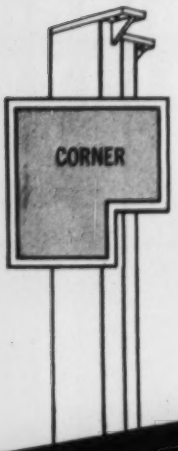
JACKSON
VIBRATORS, INC.

LUDINGTON, MICHIGAN



GENERAL CONSTRUCTION

(Left); 6 H.P. engine-driven, flexible shaft vibrator. Excellent for both thin and thick sections. (Right); 2½ H.P. electric vibrator (for light-socket operation). Handy as a pocket in a shirt, powerful enough to handle all general construction concrete vibration with shafts up to 28'.



"why didn't somebody think of this before!"

Now You Can Specify SQUARE STEEL COLUMNS by Shlagro!

Shlagro Square Steel Columns offer many advantages over conventional tubular columns — it's no wonder architects and engineers everywhere are saying "why didn't somebody think of that before!" The answer is simple — we did, but we've never been able to offer our Square columns in STOCK sizes until now!

Shlagro Columns are available in square, rectangular and corner shapes to fit your plans. In addition to the many listed sizes and weights (in the Shlagro Catalog), these columns can be fabricated to suit special conditions.

Specify Shlagro Square Columns — the advantages speak for themselves!

Write today for your copy of the Shlagro Stock Steel Square Column Catalog, a working "tool" with facts and figures on Shlagro Square, Rectangular and Corner Steel Columns!

- UNEQUALLED VERSATILITY!
- ADDED STRENGTH!
- SAVINGS IN LABOR AND MATERIALS!
- ELIMINATION OF EXPENSIVE FORMS!
- AND MANY OTHER BENEFICIAL FEATURES!

SHLAGRO STEEL PRODUCTS CORP. COLUMNS

SHLAGRO

STEEL PRODUCTS CORPORATION
SOMERVILLE, MASS.

I am interested in SHLAGRO SQUARE STEEL COLUMNS Catalog and other SHLAGRO product catalogs checked below:

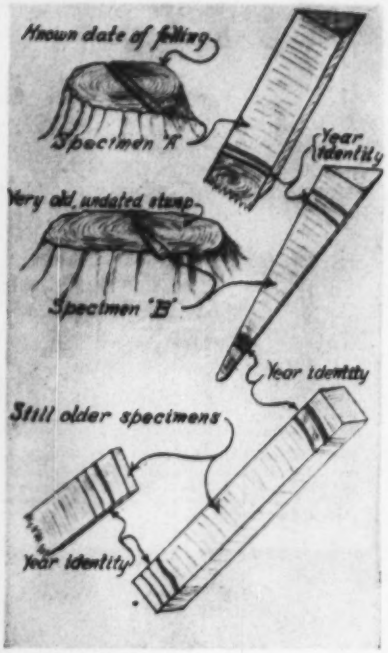
- ☐ #200 — SQUARE STEEL COLUMNS
- ☐ #100 — STOCK STEEL ROOF TRUSSES
- ☐ #150 — STOCK STEEL LONGSPAN JOISTS
- ☐ #250 — SHLAGRO SHEAR HEADS
- ☐ #300 — STOCK STEEL TURNTABLES
- ☐ #350 — SCAFFOLDING
- ☐ #400 — STOCK STEEL EGGSHELL DESIGN STEEL ROOFS
- ☐ #500 — STOCK STEEL RIGID FRAMES
- ☐ #550 — STOCK STEEL VERTICAL MEMBER TRUSSES
- ☐ #600 — STOCK STEEL VERTICAL LIFT DOORS
- ☐ #650 — NO SHELL PRE-CAST FIREPROOF REINFORCED CONCRETE COLUMNS
- ☐ #700 — STOCK STEEL FLOORSPAN GIRDERS
- ☐ #750 — STOCK STEEL WELDED PIPE TRUSSES

NAME _____

TITLE _____

Please attach to your professional letterhead and mail to:

SHLAGRO STEEL PRODUCTS CORP.
SOMERVILLE, MASS.



CROSS-DATING— Starting with rings whose date of formation is known, cross-datings can be carried back for long periods.

sequence because, in order to effect growth, moisture must be available when the tree can use it.

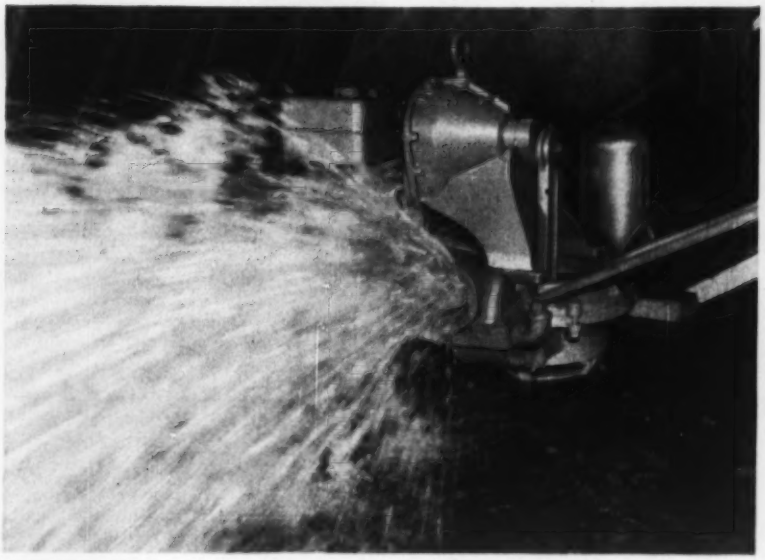
Intra-annual rings often are not identifiable as such and can confuse ring sequences. Rainfall is often "spotty", varying widely over short distances, making it unsafe to assume that indications at one point apply at distant points or to large areas.

• **In summation**—Because many factors cause variations in tree-ring thickness and sequence, caution must be used in examining over-enthusiastic claims. On the other hand, after screening out spectacular, unwarranted claims, it will be seen that enough useful information has been obtained from tree-ring analysis to encourage researchers in further, serious-minded and long-range investigations.

Ring work in England and Germany has produced much data on rainfall. The U. S. Forest Service is constantly studying rates of tree growth as are also such agencies as the Smithsonian and Carnegie institutions and the newer National Science Foundation. The work begun by Douglass long ago in Arizona has been continued and is presently carried on by Edmund Schulman. In the Laboratory for Tree Ring Research at Macalester College, Saint Paul, Minn., Waldo S. Glock, working under grants from national research organizations has compiled an enormous amount of data in comprehensive studies of tree growth in relation to climate and other phases of what tree rings can show.

JAEGER ANNOUNCES REVOLUTIONARY DIAPHRAGM PUMP

with spring-bottom bowl, free-swinging light weight valves and "kickless" operation up to 7000 gallons an hour



SPRING BOTTOM BOWL (Patents Pending)
Bottom of suction chamber is a heavy reinforced rubber disk, held by compression spring.

Quick diaphragm change is made by merely loosening 4 bolts and tilting back the pump frame.

HERE IS THE FIRST DIAPHRAGM PUMP WITH A SPRING-BOTTOM BOWL. *Self-cleaning* because the bowl-bottom flexes slightly with each stroke, preventing any build-up of clay or cement deposit. *Shock-absorbing* because the compression spring which holds the bottom yields to protect pump frame and transmission if stones or other objects are sucked into the pump.

Light, free-swinging suction and discharge valves offer minimum resistance and quick closure to an air-tight seat that permits high vacuum pumping (4" pump handles 4000 gph at 25' suction lift; up to 7000 gph at 10' lift). Surge chamber takes "kick" out of suction hose, doubling its life. Built in 3" and 4" sizes with heavy duty air-cooled engines, fully enclosed heat treated gears, pinions and shafts.

HIGHER ACTUAL PERFORMANCE ON 1957 JAEGER "SURE PRIME" CENTRIFUGALS

LATEST TESTS of all sizes of Jaeger "Sure Prime" pumps, reproducing actual job conditions, establish higher capacities and performance never before guaranteed to users. For example, the 1957 model Jaeger 6P pump, at 10' static suction lift, now exceeds 100,000 gph in *actual* performance.

BASE YOUR 1957 PUMP BUYING ON 1957 INFORMATION. Ask your Jaeger distributor, or write today, for the *guaranteed actual performance* of 1957 model Jaeger pumps in the sizes your work requires.

←
Discharge of Jaeger 6" pump from bridge pier cofferdam on Peter Kiewit Sons Co. job on Clark Fox River, near Noxon, Mont.

←
Pump working inside the cofferdam. Pier area is 30½' x 42' and is near center of river where inflow is heavy.

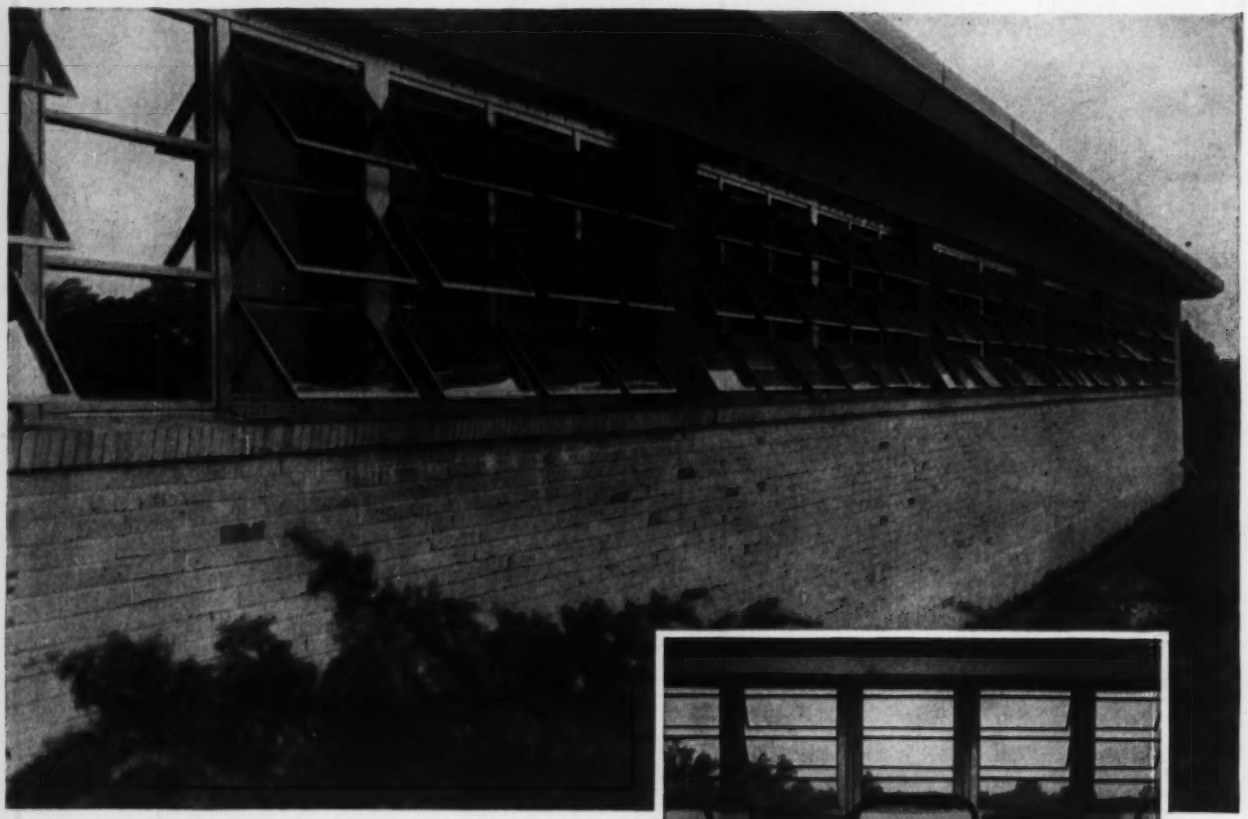
THE JAEGER MACHINE COMPANY

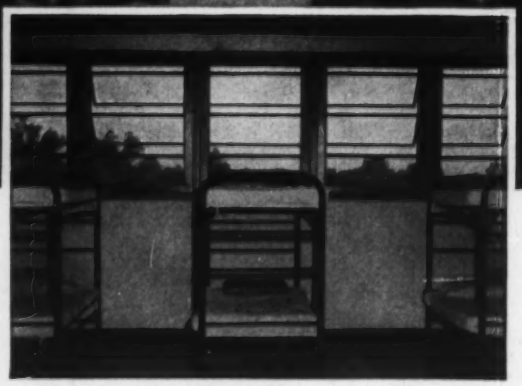
200 Dublin Avenue, Columbus 16, Ohio

AIR COMPRESSORS • CONCRETE MIXERS • TRUCK MIXERS • SPREADERS • FINISHERS

Kentucky Children's Bureau Reception Center, Lyndon, Kentucky. Arrasmith and Tyler, architects; Rostetter Construction Co., contractor.

Fresh





Truscon Steel Intermediate Projected Windows. Tamper-proof mechanism can be operated by authorized personnel only. Interior view shows detention screens installed.

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels

air and sunlight...

PLUS RESTRAINT

Look at that sweep of fresh air and sunlight designed into the new Kentucky Children's Bureau. Certainly no appearance of detention. But, it's there!

The windows are Truscon Steel Intermediate Louver, fitted with detention screens. Easy-acting, tilt-out ventilators operate simultaneously to provide precisely controlled ventilation and close snugly to provide positive weather protection. In detention applications, degree of vent opening can be controlled by authorized personnel only.

While detention is but one use for this versatile intermediate window, it is an important application. If you expect to be dealing with problems involving specification of psychiatric or detention windows, it will pay you to talk to Truscon. It's taken us forty years of specialized experience, but we've got the answers in this highly technical field.

And, Truscon has a knack of designing psychiatric and detention windows that conceal or minimize all indications of enforced restraint. That's important. As is careful engineering to protect patients against self-injury and to prevent escape.

Check with your Truscon district office for specialized help, or send coupon for complete window catalog.

STEEL

and Steel Products

MORE TRUSCON PRODUCTS FOR INSTITUTIONAL SAFETY...

Truscon "O-T"® Steel Joists make floors and roofs fire-resistant, strong, lightweight. Fire-resistant ceilings of Truscon Metal Lath and plaster can be suspended from joists. Truscon "O-T" Steel Joists bear the Seal of Approval of the Steel Joist Institute. That's your assurance of quality construction, dependable performance. Send coupon for facts.

Truscon Steel Doors are as handsome as they are functional. Dependable operation assured even in high traffic locations because steel won't warp, swell, shrink or splinter. Furnished complete with hardware and frames. Easiest of all to install. Economical. New booklet tells all. Send coupon.

REPUBLIC STEEL CORPORATION
Dept. C-3018
3114 East 45th Street
Cleveland 27, Ohio

I'm interested in more facts on these products of Republic's Truscon Steel Division:

☐ Psychiatric and Detention Windows ☐ Steel Doors
☐ Truscon "O-T" Steel Joists

Name_____ Title_____

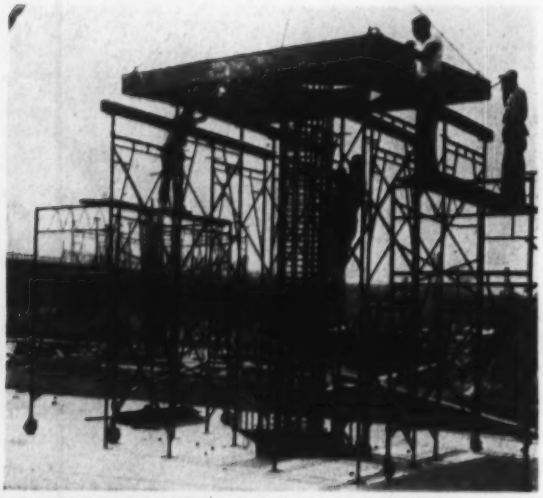
Firm_____

Address_____

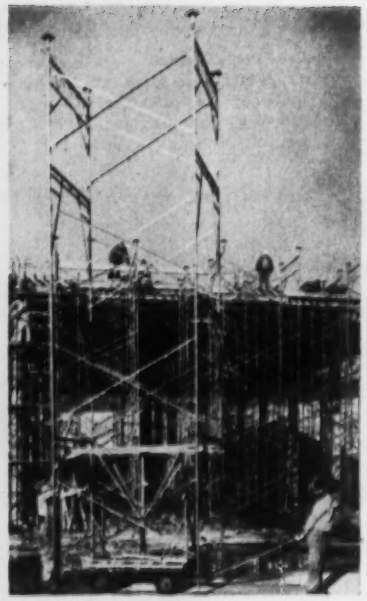
City_____ Zone____ State_____

New Shoring Methods . . .

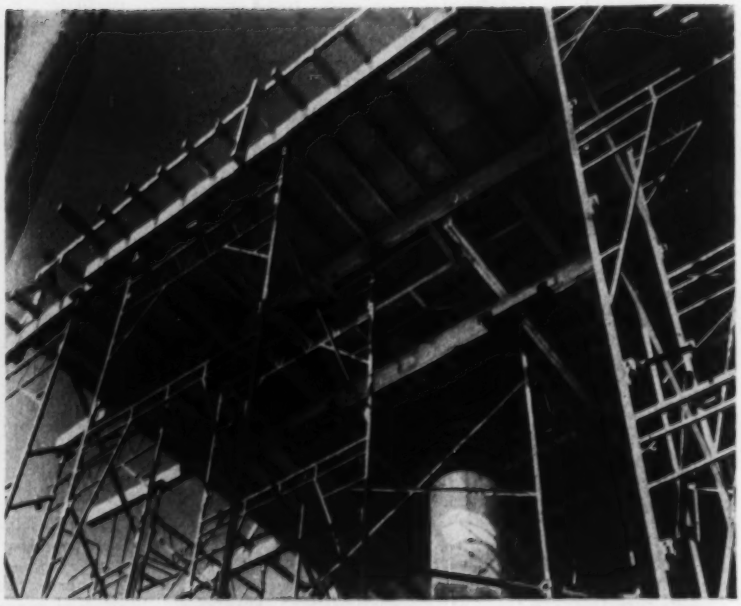
by Patent Scaffolding Co.



ROLLING SCAFFOLDS AID SHORING—"Trouble Saver"® Sectional Scaffolds make platforms for workmen guiding "prefab" drophead form being lowered by mobile crane onto 4x6 stringers. Donald F. Shaw uses this mechanized system on 3-story, 556' x 250' United Parcel Service bldg., Los Angeles. More than 2,700 "Trouble Saver" Shoring frames support formwork for 3" waffle-type floors.



DOLLY ASSIST—PS Co.-developed hydraulic, wheeled dollies speed the movement of entire prefabricated sections of "Trouble Saver"® Shoring to successive pours on this huge 291' i.d. concrete reservoir at Reading, Pa.



RESERVOIR SHORING—"Trouble Saver" Sectional Shoring frames support cantilevered, double 2" x 8" stringers around drop head under concrete slab for the same reservoir reported, left, on which B. F. Ziegler Construction Co. is the general contractor. Curved dome varies from 28' to 31' high. Assembled shoring sections are moved to new pour locations on PS Co.-developed hydraulic, wheeled dollies, and by caster attachments, similar to those shown in the photo above.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY

Gold Medal LADDERS SCAFFOLDING

THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street Dept. ENR Long Island City 1, N. Y.
West Coast: 6931 Stanford Ave., Los Angeles 1, Calif.
In Canada: 355 Dufferin St., Toronto
Branches in all principal cities

U.S. Money Aids Foreign Transportation

As a result of a U. S.-sponsored drive for improvement of internal transport facilities throughout the free world, highway programs totaling more than $180 million, and railway, airport and port developments of more than $150 million now are under way.

The International Cooperation Administration last week listed among the achievements of the program these projects:

• **Highways**—For a network of 17,000 miles of all-weather highways, Turkey spent $135 million, of which $40 million was a grant by the U. S.

In Spain, the first stage of highway improvements involves approximately 240 miles. Priority is given to the roads around the naval base at Rota, the air bases at Moron, Torrejon and Balenzuelas, as well as improvements along the Cadiz-Sevilla highway.

ICA has financed a reconnaissance survey for an expanded highway program in Vietnam.

More than 625 miles of highways will be rehabilitated or reconstructed over a three-year period. In nearby Cambodia, the U.S. is providing approximately $15 million for construction of a road from the capital, Phnom Penh, to a new deep sea port being built by the French government on the Gulf of Siam.

U. S. funds for highway improvement and an additional $2 million worth of roadbuilding equipment have reinstituted Thailand's ill-fated five-year highway development program — the Northeast Highway, to link the capital, Bangkok, with remote northeast provinces.

Construction in the Philippines centers around four major highways on the island of Mindanao. The U. S. contributed $8 million worth of equipment and technical assistance.

Assistance also has been extended to Bolivia and Guatemala, where proceeds from sales of $21 million worth of U. S. agricultural commodities are being expended for maintenance and roadbuilding.

In Bolivia, the funds go for maintenance on secondary hard-surfaced roads connecting with the Cochabamba-Santa Cruz Highway, and to finance engineering and construction of an all-weather bridge over the Piray River.

Guatemala is getting assistance on construction of the Pacific Slope Highway from Mexico to El Salvador and the Atlantic Highway connecting Guatemala City with the Atlantic ports of Puerto Barrios and Santo Tomas.

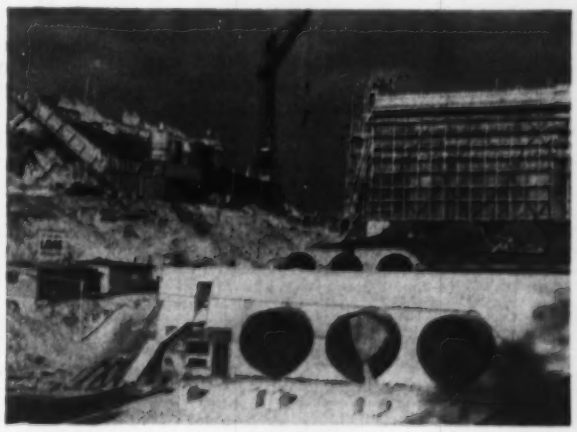
• **Railroads** — Railway rehabilitation mainly involves supplying of new locomotives and steel for railway uses, with emphasis on improving service in war-damaged Korea, Formosa, India, Iran and Spain. The total railroad expenditure by the U. S. in Korea amounted to more than $100 million. Aid included supplying 2,500 freight cars to the Korean National Railways, 41 steam and 4 diesel locomotive and thousands of tons of steel rails and other equipment. New construction has been possible through 52 miles of difficult terrain, notably the Ch'oran-Haesong Line, which permits shipment of coal from Seoul's mines in 10 hours. Previously, shipments by rail and sea took 10 days.

India's railway system is undergoing rehabilitation as part of that nation's present development program. Major expenditures are being made out of India's own resources but the U. S. is providing 100 new locomotives and more than 8,000 freight cars. All the locomotives and most of the freight cars already have arrived in India.

Supplies of steel also are being provided for railway use in India, Iran and Formosa.

Fourteen diesel locomotives, machine tools for locomotive maintenance, 50,000 tons of rails and rail accessories have been received by the RENFE (national railways network) in Spain. Iran also has been aided with new diesel locomotives.

(*Continued on next page*)



Germans Build Pumped Power Storage Scheme

Near Hamburg, Germany, a 100,000 acre-ft reservoir is being constructed to receive water pumped from the Elbe River. The stored water will be released through turbines during peak electric power consumption periods in Hamburg. At present, the city's power is supplied almost exclusively by thermal plants. In photo at left, the reservoir is being lined with bitumen. Other photo shows impounding dam in background and pressure lines leading to the power station.

NATIONAL PLUMBING CODE HANDBOOK

JUST OUT! Offers a clear, simple guide to the National Plumbing Code, explaining and illustrating its meaning and intent, paragraph by paragraph, and including much related technical information and data to aid in the design and installation of plumbing, water supply, sewage, and drainage systems that will meet Code standards. **Edited by Vincent T. Manas, Consulting Engr. 503 pages, 389 illustrations, $7.50.**

PUMP SELECTION AND APPLICATION

JUST OUT! From the bare outline of your pumping problem to the completed installation, this book brings you specific recommendations and exact data to save you time and help you secure more for your pumping dollar! Besides fundamental methods, book shows how to handle specific pumping problems in more than a score of industries. **By Tyler G. Hicks, Power Magazine and Cooper Union School of Engrg. 422 pages, 411 illustrations, $8.50.**

ELECTRICAL SYSTEMS DESIGN

JUST OUT! Brings you a complete picture of all that is best in modern practice in the design and layout of electrical systems for power, light, heat, signal systems, and communications. You'll find your every question answered—from specific loads and the circuits to serve them, down to switching and protective arrangements for the incoming power supply. **By J. F. McPartland and the Editors of Elect. Const. & Maint. 140 pages, fully illustrated, $6.00.**

CONSTRUCTION PLANNING, EQUIPMENT, AND METHODS

Shows you how to plan and carry out construction jobs using the best combination of field-tested methods and engineering fundamentals. How to analyze the project, prepare all schedules, and choose and manage the best equipment and methods for any given job is covered in great detail. **By R. L. Peurifoy, A. & M. College of Texas. 533 pages, 385 illustrations, $8.50.**

ANNOUNCING . . .

NEW McGRAW-HILL BOOK CATALOG

Just off press — 1957 catalog describes over 1000 books, all subjects, to help you advance, solve problems. Send 25¢ for mailing costs; catalog free. Check below.

SEE THESE BOOKS 10 DAYS FREE

McGRAW-HILL BOOK CO., INC., Dept. NR-3-7
327 W. 41st St., N.Y.C. 36

Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep, plus few cents for delivery costs, and return unwanted book(s) postpaid. (We pay delivery costs if you remit with this coupon—same return privilege.)

- ☐ Manas—**Nat'l Plumbing Hdbk.**, $7.50
- ☐ Hicks—**Pump Selection & Appl.**, $8.50
- ☐ McPartland—**Elect. Systems Design**, $6.00
- ☐ Peurifoy—**Const. Planning, Equip. etc.**, $8.50
- ☐ **Send 1957 Catalog; I enclose 25¢**

(PRINT)

Name .....

Address .....

City ..... Zone.... State.....

Company .....

Position .....

For price and terms outside U. S., write McGraw-Hill Int'l., N.Y.C. NR-3-7

. . . International

• **Airports**—In air transport, aid has been principally in providing technical help and training. Turkish aviation personnel are being trained in modern techniques of air line transportation through a contract sponsored by the ICA. A similar $14.5-million contract between Pan American and Pakistan International Airlines is helping to expand and modernize Pakistan's air transport system. Five million dollars on a loan basis and more than $9 million as a grant have been made available through ICA to help Afghanistan expand its domestic airlines services, build new airports and develop an international airport at Kandahar. Communication and navigational equipment for aircraft and airport control towers are provided for Spain. Development assistance also was granted to Brazil for the purchase of navigational aides for two of the country's largest airports—at Sao Paulo and Rio de Janeiro.

Twenty-five technicians are being sent to Thailand for three years to assist Thai Airways Co. and to train the Vietnamese technicians. Similar assistance to Indonesia over the last five years has been extended to a number of airline projects. Garuda Indonesia Airways now is able to repair its large engines in its own shops with monetary savings of about $350,000 per year.

Port improvement assistance in Formosa, Korea and Indonesia has restored shipping and improved service. Turnaround time has been cut and cargo capacity per ship has been increased considerably.

Six U. S. Firms to Aid Korean Reconstruction

Smith, Hinchman & Grylls Associates, Inc., Detroit architectural and engineering firm, will head a team of six U. S. companies that will spend two years aiding the Republic of Korea in the reconstruction and stabilization of its economy.

Under the contract, which involves $3.5 million in funds from the International Cooperation Administration, engineers and specialists from the U. S. firms will supply guidance to Syngman Rhee's government and the ICA in transportation, mining, electric power, public works, tele-communications and general industry.

The joint venture is expected to start late this month. Smith, Hinchman & Grylls will be responsible for administration, general industry and public works.

Other firms will be Commonwealth Associates, Inc., Jackson, Mich., electric power and public works; Brown & Blauvelt, New York, public works and transportation; Paul Weir Co., Inc., Chicago, mining; Page Communications Engineers, Inc., Washington, D. C., communications, and Commonwealth Services, Inc., New York, management and training program.

New Three-Nation Company To Canalize the Moselle

Canalization of Europe's Moselle River (ENR Apr. 5, 1956, p. 65) moved closer to realization with the recent founding of a three-nation company to carry out the project. The company is the International Moselle Canal Co., founded by France, West Germany and Luxembourg, following agreement by the three states on the plan.

The Moselle is to be canalized along a 170 mile stretch from Thionville to Coblenz, where the Moselle joins the Rhine River. Ships of up to 1,500 tons will be able to pass through 13 locks expected to be built. Cost of the project is estimated at around $150 million.

When completed, the canal will provide cheap and fast transport between the industrial districts of Lorraine and Luxembourg and the coal fields of the Ruhr.

British to Begin Work On London Expressway

With the letting of the first contract, work is expected to start within a few weeks on a $3 million arterial highway scheme to bring traffic into and out of metropolitan London.

The work will include an overpass ½ mile long, and a traffic circle about 400 ft in dia, and will be the first major two-level highway scheme to be carried out in London since World War II. The project will serve as the junction of the Great West Road and the Cromwell Road extension, replacing a one-level junction now used by some 40,000 vehicles daily. The superstructure of the overpass bridges will incorporate prestressed precast concrete beams to carry a cast-in-place hollow slab.

Block Machine Developed

A cheap, hand operated machine that can turn out 1,000 blocks a day has been developed by the Inter-American Housing Center of the Organization of American States. The machine is to make blocks for low-cost housing construction in rural Latin America.

The machine can be put together from easily obtainable parts, chiefly iron plates of various sizes, at a cost of about $30.

$8,269.02 (Hartford File #HM53-2037)

$850.67 (Hartford File #61474)

$4,000.00 (Hartford File #18217)

Many contractors are protected against equipment losses like these...

are you?

No matter how well your men know their jobs ... no matter how rugged your machines are ... your major financial investment in equipment demands adequate insurance against loss.

That's why you need the protection offered by a Hartford Contractors' Equipment policy. This insurance is available for all of your equipment. It protects it against loss by fire, theft, explosion, landslide, overturn, collision, windstorm and other specific hazards. Covers them on the job ... in transit ... in storage.

And with Hartford protection, you know that in case of accident help will be there fast! For we're set up to save you costly delays ... to work with you to get equipment back on the job in short order ... to pay your claim promptly.

Make sure *you'll* have this satisfying protection and service when you need it. *The first step?* Write for more information ... and a copy of our useful booklet, *Your Machinery and its Actual Cash Value.* Better yet, call your Hartford Group Fire Insurance Agent or your insurance broker!

Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company Group
Hartford Fire Insurance Company
Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company
Citizens Insurance Company of New Jersey ...
Hartford 15, Connecticut
New York Underwriters Insurance Company ...
New York 38, New York
Northwestern Fire & Marine Insurance Company
Twin City Fire Insurance Company ...
Minneapolis 2, Minnesota

MAIL THIS COUPON — TODAY

HARTFORD Fire Insurance Company Group
Hartford 15, Conn.

Please send me more information about the advantages of a Hartford Contractors' Equipment Policy. Also include a free copy of *Your Equipment and its Actual Cash Value.*

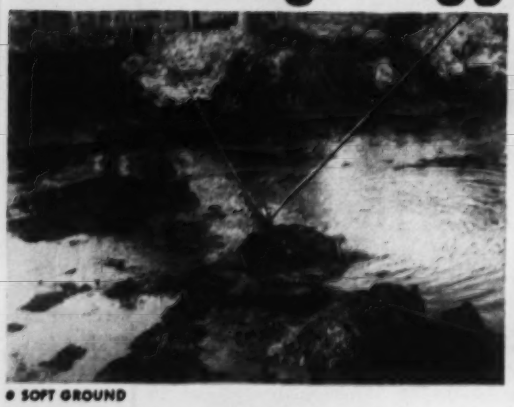
Name_____

Firm_____

Street_____

City_____ **Zone**_____ **State**_____

Got A Tough Digging Job?



● SOFT GROUND

● DEEP WATER

● NARROW SPACE

● STEEP HILLS

Use A Sauerman DragScraper

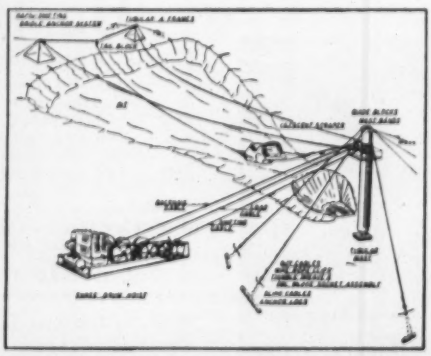
● **SOFT GROUND**—Sauerman DragScrapers work on surfaces where wheeled equipment cannot go and where mats are required to operate a dragline. The DragScraper digs and hauls its load quickly at ground level to hopper or pile. It carries a payload of two to three times its weight. You are not paying the power costs of a heavy machine with a handling capacity that is just a small portion of its weight.

● **NARROW SPACE**—A DragScraper can be operated through an opening no larger than the bucket's width. They are used successfully in culverts, sewers, tunnels, under bridges and buildings. Locations with limited space and head room . . . unworkable with other equipment . . . are handled efficiently and economically with a DragScraper.

● **DEEP WATER**—A Sauerman DragScraper will dig as much as 100 ft. below water . . . this is far below the safe depth that a dragline bucket can go without the danger of undermining and overturning the machine. Use a DragScraper for trenching, digging channels, lakes or for beach construction.

● **STEEP HILLS**—These are routine for a DragScraper. Material can be taken from anywhere on the bank. Digging from the top of the slope eliminates cave-ins—and the DragScraper gives an extra bonus by pushing additional material in front of the bucket on its way down the slope.

The Sauerman DragScraper operator and hoist is always located away from any hazardous area. It is designed for years of safe, continuous duty, handling bucket sizes up to 15-cu. yds. over spans to 1000 ft. or more.



THE SAUERMAN METHOD—*showing a basic DragScraper installation. Variations of this method are Sauerman engineered to handle the toughest digging jobs at the lowest cost per cu. yd.*

When you have a "tough-to-handle" job consult Sauerman engineers about Sauerman equipment and the Sauerman Method. Request Catalog A, also the Sauerman News and field reports.

SAUERMAN BROS., INC. 632 SO. 28th AVE. BELLWOOD, ILL.

Crescent Scrapers • Slackline and Toutline Cableways • Durolite Blocks

. . . International

"Do It Yourself" Manual To Improve Homebuilding

The lack of trained builders has been recognized as one of the factors contributing to the acute housing problem in Latin America. To offset it, the Inter-American Housing Center at Bogota, Colombia, has prepared for distribution a housing manual to serve as a detailed, overall guide to the unskilled worker.

The manual, a 182-plate portfolio, is published in Spanish and covers in detail every phase of housebuilding. Complicated technical principles are illustrated in simple terms. To keep costs down, the manual calls for use of local materials, such as straw, palm and adobe, wherever possible and lists the amount and dimensions of each item needed.

Before dealing with construction procedures, the manual discusses such basic concepts as planning of room sizes, ground formation and water levels, preparation of materials and economics. Then all stages of building are covered, including drainage, plumbing, electrical, foundation and selection of home and village sites.

Over 60% of the population of Latin America lives in areas far from the services of trained technicians and experienced construction men. The manual is expected to be of great value in these regions in improving the quality and permanence of housing.

Oslo Symposium to Cover Concrete Shell Roofing

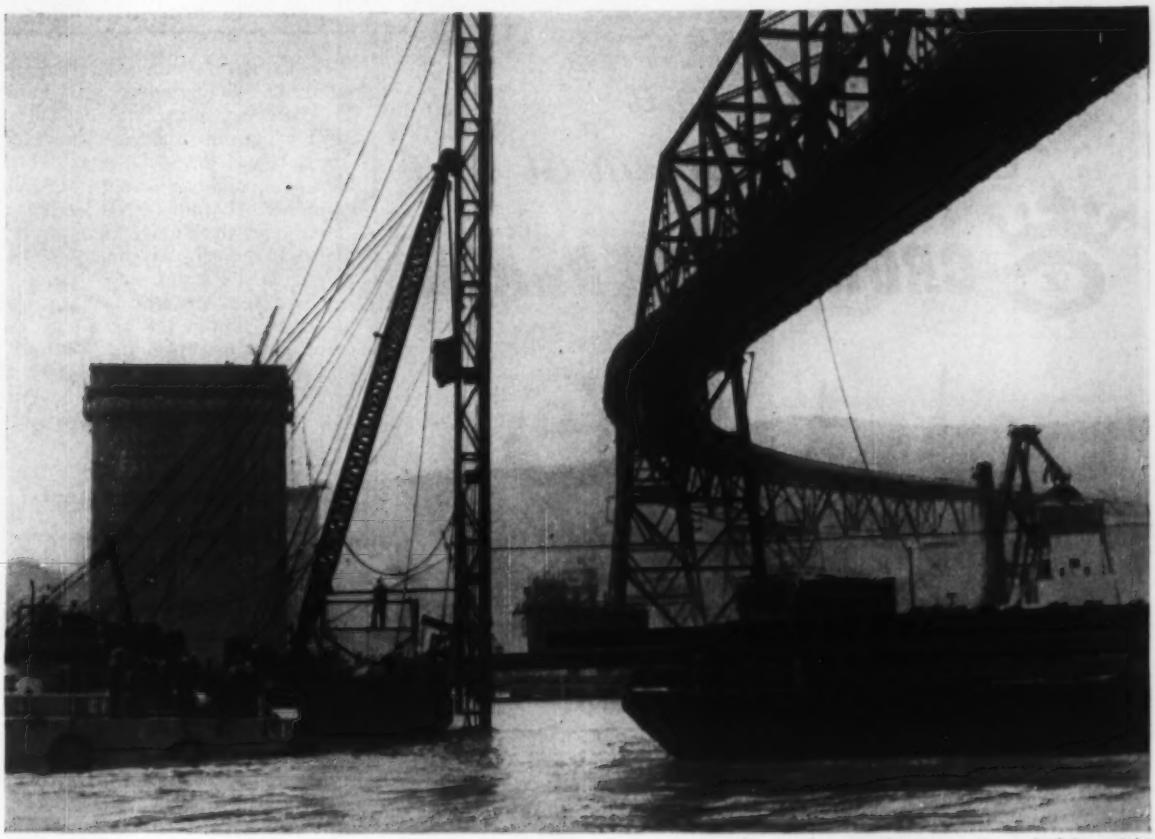
A symposium on concrete shell roof construction is to be held at Oslo, Norway, July 1-3. The conference is sponsored by the Norwegian Engineering Society in cooperation with the Norwegian Concrete Association. A similar meeting was organized in 1952 by the British Cement and Concrete Association.

Those intending to participate are advised to register no later than April 1. The registration fee is 150 Norwegian kroner ($21.00). All correspondence should be addressed to The Organizing Secretary, Second Symposium on Concrete Shell Roof Construction, Den Norske Ingenioforening, Kronprinsens gt. 17, Oslo, Norway.

Poles Let Builders Form a Private Firm

A group of engineers will operate the first private company formed in Poland since the Communists took control at the end of World War II.

(*Continued on p. 66*)



Piers for new Carquinez Straits span rise to the left; at right, the existing bridge. Barge derrick hoists Bethlehem H-piles, prior to driving to bedrock. *Substructure contractors:* Mason & Hanger, Silas Mason Co., and F. S. Rolandi, Jr., Inc.

Steel piling for bridge piers stands in 100 ft of water

Unraveling a major traffic bottleneck on California's U. S. Route 40 required the building of a new span over Carquinez Straits, an arm of San Francisco Bay. The existing bridge will carry southbound traffic; the new bridge will provide four lanes for northbound traffic.

Piers 4 and 5 of the new bridge were placed in cofferdams of Bethlehem Sheet Piling. Pier 5 was placed in comparatively shallow water on the Contra Costa County side. At pier 4, the base of the cofferdam rests on 261 Bethlehem H-piles, driven in deep water to bedrock. Six of these piles were spliced to 145-ft lengths and placed at the corners and the centers of the 113-ft sides.

The remaining three piers are constructed in open-dredged caissons, built by the Shipbuilding Division of Bethlehem Pacific Coast Steel Corporation, Bethlehem's West Coast subsidiary, and towed to the site. In the placing of all substructure work for the Carquinez Straits span, the tricky nature and velocity of the tides had to be carefully studied, and depths as great as 100 ft taken into account.

Dewatered cofferdam of Bethlehem Sheet Piling section ZP38 is braced with steel to withstand exterior water pressure.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

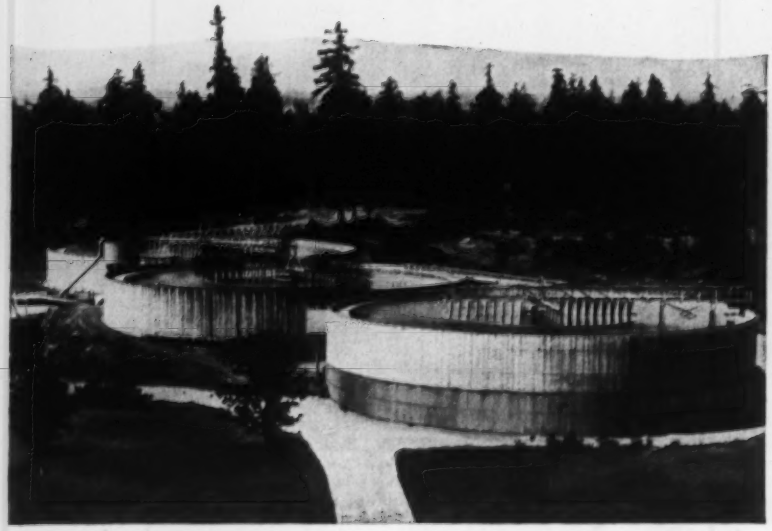
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Solution to a "Current" Problem at

CROWN ZELLERBACH



In what other way you may ask — besides floating a log boom downstream — would a river current affect production in a paper mill? If you were operating a mill on the Willamette River where it joins the Columbia, you'd find that obtaining clear process water for production of bleach pulp could be a major headache. Contributing facts to this problem are the tidal action of the Pacific Ocean and the presence of turbidity and color — both characteristics of these two rivers. Specifically, this problem occurred at the St. Helen's Division of Crown Zellerbach, St. Helens, Oregon. The solution — three 120 ft. dia. Dorrco Clariflocculator units which now produce 30 million gallons of water per day containing less than 5 parts per million color and 5 ppm turbidity.

Obtaining process water for the pulp and paper industry may be only of academic interest to you. But, if you have a problem involving the separation of finely divided solids in suspension, the use of fluidizing techniques or ion-exchange, the chances are that Dorr-Oliver and its Associated Companies throughout the world can be of service to you.

*Clariflocculator is a registered trademark of Dorr-Oliver Incorporated

DORR-OLIVER
INCORPORATED
WORLD WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U.S.A.

. . . International

In partnership with a local administration of the Communist government, 13 Warsaw builders will capitalize a $100,000 firm for apartment-house construction and the manufacture of prefabricated building elements. The builders raised one-third of the money, the government two-thirds. Profits will be shared accordingly. Machinery has been bought from the state.

The Polish Ministry of Finance approved the venture last November. First orders were taken by the new firm in January. It will build workers' settlements in Zyrardov, Otwock and Pruszkov, the latter town, near Warsaw, is the company headquarters.

Pakistan Dam Contract Let To Utah Construction Co.

Utah Construction Co. of San Francisco recently signed a $30.5 million contract with the Pakistani government for construction of a multipurpose dam on the Karnafuli River, about 30 miles north of Chittagong in East Pakistan.

The dam—the largest development project in the history of East Pakistan—is expected to be completed in two to three years. Initially, 80,000 kw of generating capacity are to be installed. This will be raised eventually to 120,000 kw. The dam also will be used for irrigation and flood control, and will facilitate access by water to 1,000 sq mi of virgin timber.

Dollar costs of the project (to be $24.5 million) will be financed by the U. S. International Cooperation Administration, which administers foreign economic aid programs. Total cost (dollar and rupees) will be $68 million.

The dam will be the largest development project in the history of East Pakistan.

Greece's Largest Hotel Is Planned for Athens

Plans have been announced for what will be the largest hotel in Greece. The new hotel, to be located in Athens, will be built by the Pezas family interests, who will finance it jointly with the Greek government. Hilton Hotels International will operate and manage it under an arrangement similar to those in effect in Spain and Turkey.

The hotel, to be named the Athens Hilton, will have about 300 guest rooms and will be air-conditioned. It is expected to cost $6 million and to be opened in 1959.

Plans for the hotel will be developed by a Greek architect working with the Hilton design staff and U. S. consulting architects.

The 30-ft pipe lengths were transported to the site from a railhead at Carhuamayo by truck-trailer over a 60-mile tortuous mountain road to a point near the surge tank. From there, pipe sections were lowered downhill, into position by means of an inclined railway running parallel to the course of the penstock.

A crew averaging 17 men, using a minimum of special equipment, moved the pipe sections into position from the car to the concrete pier saddles. Engineering and construction was by Ebasco Services, Incorporated.

Steel Penstock Harnesses Paucartambo River for Peru's Latest Hydroelectric Power Plant

In Peru, as in all the other rapidly growing countries of South America, electric power is one of the vital keys to progress. Projects like the harnessing of Peru's Paucartambo River by the Cerro de Pasco Corp. are opening the door to industrial expansion and higher standards of living.

Lifeline of this modern power station is a 4,600-ft penstock in diameters from 74" to 80", made possible by the use of steel pipe and Dresser Couplings. Total vertical drop from a high-level supply tunnel to the power station below is 1,550 ft.

The pipe wall thickness ranges from 7/16" at the top to 1 13/16" at the bottom where the line gives bottle-tight service under a 1,730-ft static head.

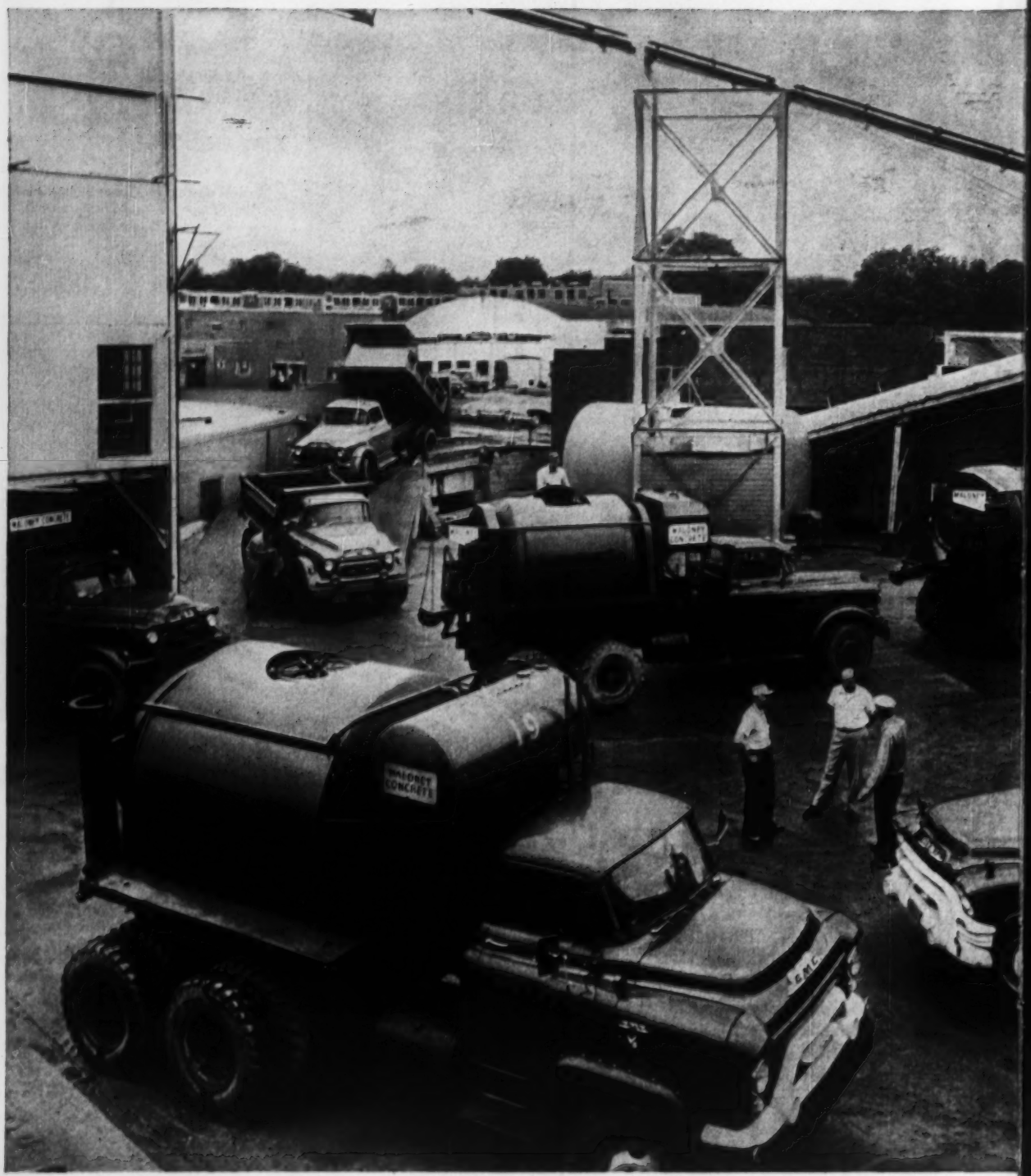
Dresser Penstock Couplings made it possible to eliminate expansion joints and follow the terrain with a minimum of grading. Since the penstock is located in an earthquake area, the resilience of Dresser gaskets gives extra insurance against damage by earthquake shock.

With the pipe in place in the saddles, wrenches were the only tools needed to seal the Dresser Couplings, forming dependable, permanently tight joints.

The fast, easy installation through the use of Dresser Couplings permitted completion well within the allotted time schedule and estimated cost.

For useful engineering data on other successful Dresser-Coupled steel penstock installations, send for new illustrated penstock brochure. Write: Dresser Manufacturing Division, Bradford, Pa. Sales offices in: New York, Philadelphia, S. San Francisco, Chicago, Houston, Denver, Toronto and Calgary.

These GMC's haul 1½



MALONEY CONCRETE's new GMC tandems – shown here – feature a new *extra-tough*, lightweight construction that lets you deliver 1 to 1½ yards more concrete than conventional trucks. That's typical of the money-making advantages found in GMC Blue Chip construction trucks – all the way up to 63,000 GVW-90,000 GCW.

yards extra—every trip

—that's why Maloney Concrete of Washington, D.C., brought their GMC purchases to 225 with these tandems

IT'S the same thing the country over. Top contractors and builders are putting more and more Blue Chip GMC's to work—for one simple reason: *These trucks do bigger jobs—do them better—and do them faster—yet cut costs to amazing new lows.*

ENGINEERED FOR RUGGED SERVICE

Every GMC construction hauler is designed and built for the toughest operations: Frames are far stronger than need be. Axles are oversize. There's a choice of extra-husky transmissions. And with that extra "muscle," repair needs are far fewer—repair costs far lower.

EXTRA-POWERED, TOO

GMC power is another cost-shrinker—whether you choose a new short-stroke V8—a high-torque Six—or 2-cycle Diesel. Users report exceptional fuel economy—even when you use the new front PTO* to turn the mixer, too. And—according to these owners—everywhere—you can go as much as *double* the usual mileage between overhauls.

EVERY JOB GOES FASTER

With less shop time, GMC's give you more worktime. Their huge power reserve zooms you up out of the pit faster—shortens trips over the roads. And Safety Power Steering* saves both time and effort—especially in off-the-highway jockeying.

ONE FOR EVERY HAULING JOB

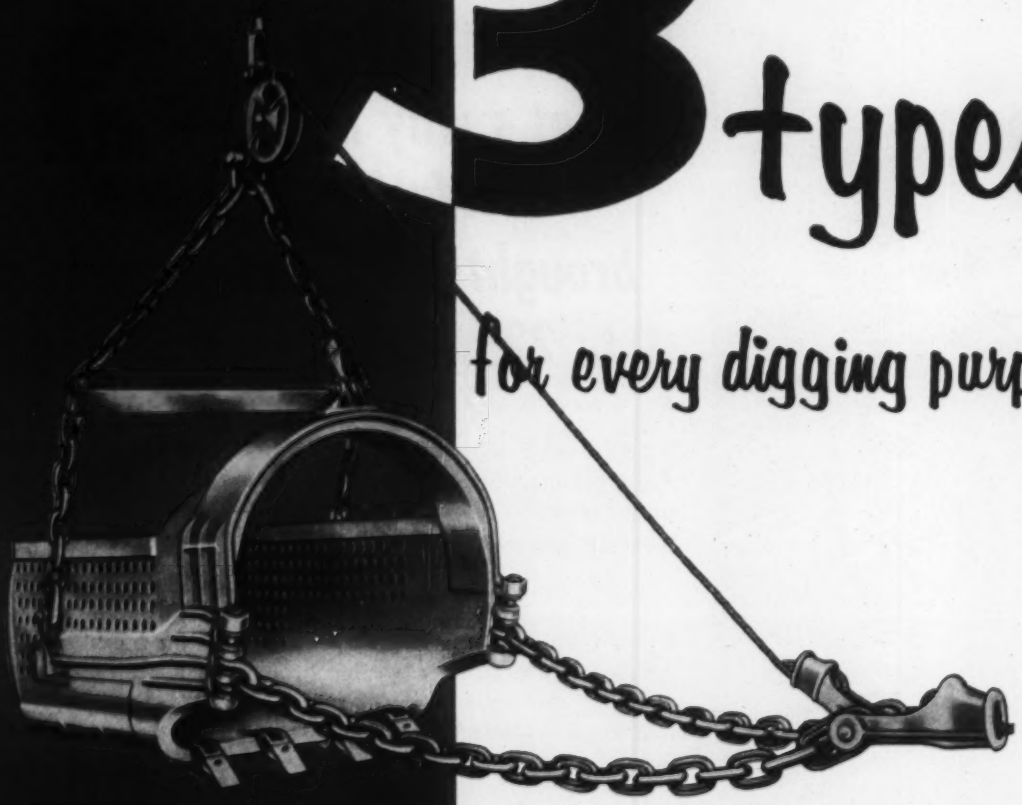
There's a complete range of GMC's in new Blue Chip Money-Maker line. They're the trucks that let contractors shade bids closer—land more business—*and earn bigger profits*—in every kind of construction work. Check *your* particular needs *now*—with your GMC dealer!

**Optional at extra cost*

GMC TRUCK & COACH—*A General Motors Division*

3 types

for every digging purpose



All Hendrix Buckets available without perforations

¼ to 40 Cubic Yards

Hendrix Lightweight Dragline Bucket

HENDRIX MANUFACTURING COMPANY, Inc.

MANSFIELD, LOUISIANA

TYPE "LS" . . . *Lightweight*

A lighter weight bucket designed for levee and drainage work

TYPE "TS" *General Purpose*

Unexcelled for Medium-Duty Service

TYPE "HS" . . *Heavy Duty*

A heavy-duty bucket for moving shale, blasted rock and other hard formations

Single Home Sewage Plant

Designed to service single-homes in areas where septic tanks are not practical or not permitted is the new odorless sewage treatment system, called "Cavitette" by its manufacturer. Its principal components include an aeration compartment, a settling compartment, a return sludge line, an influent line from the house and an outfall line.

Powered by a ½ hp electric motor operating intermittently, the system is designed to serve a household of four to six persons, with sufficient safety factor to serve two to four additional persons, occasionally. Installation costs of a Cavitette system, according to the manufacturer, vary from $600 to $1,000, depending on whether a tile field or sand filter is required by local codes.

In operation, the system relies on a biological process involving aerobic bacteria—active in the presence of free oxygen—to accomplish treatment. It handles domestic sewage, garbage disposal and waste liquid from dishwashers and clothes washers.

The solids and fluids flow from the house fixtures into the two-compartment tank which can be set completely below ground, or with the operating motor above ground. Located in the aeration compartment, this ½ hp motor drives a rotor located near the bottom of the tank. Outside air is drawn down a hollow shaft and dispersed through the rotor throughout the contents of the compartment. In the second compartment—the settling chamber—settleable solids drop to the bottom of the compartment and are returned to the aeration compartment for further oxidation. Organic material in the liquid waste is oxidized, while the inorganic or fixed solids eventually go out the outfall. YEOMANS BROTHERS CO., 1999 NORTH RUBY ST., MELROSE PARK, ILL.

Fitting for Plastic Pipe Seals Under Force Fit

A paper-thin layer of plastic on the inside wall of a new pipe fitting is claimed to prevent leaks at joints in cemented or solvent-welded plastic pipe.

The plastic layer, a few thousandths of an inch thick, makes the inner half of the fitting slightly smaller than the outside diameter of the pipe it is used to joint. A light coat of solvent base cement on both the inside of the fitting and the pipe end is used to soften the plastic layer. The pipe then is pushed into place and high contact pressure causes a positive weld, according to the company's design engineers. They also claim that the weld is strong enough in seconds for ordinary handling and the joint is strong as the pipe itself after two hours.

The fittings, called Uscoweld, are made of a styrene- acrylonitrile blend, and have flares entrances leading to the narrow interior section for quick pipe insertion. Fittings come for standard pipe sizes ranging from ½ to 2 in. dia. U. S. RUBBER, FORT WAYNE, IND.

Sealing Process Glazes Wood by Melting Lignin

In a new plastic-sealing method for wood, lignin—one of the major constituents of wood fiber—acts as a sealer. Now being licensed under the name "Microseal," the process consists of applying thermosetting resins to the surface and subjecting the wood to pressure and quick heat between rollers. The lignin in the surface cells melts, mingles with the applied resins and flows through the cell structure of the wood. It cools as a dense semi-glazed surface.

Either plywood or solid wood can be treated. The patentee for the process says the sealed wood surface can be left as is; or it can be stained, painted, or otherwise finished, without the use of primers. Finish coat can be applied as the first coat. Grain and fiber raising are said to be eliminated. Nonabsorptiveness of the sealed surface reduces the required quantity of finishing materials by one-third or more and labor by one-half, according to the firm originating the process. SATIN SURFACES, INC., 31ST & MARKET ST., LOUISVILLE 12, KY.

Hollow Auger Permits Sampling While Boring

A hollow stem auger, the MDX 9026, permits undisturbed sampling without withdrawing augers from the drilled hole, according to the manufacturer. A removable plug in the drill head on the lead auger prevents material from entering the auger core. At the desired depth, the plug is removed and the sampling tool lowered through the hollow augers to the strata to be tested. Washed or forced samples can be taken.

Coring may be continued through

COMMENT.

from the

BUTLER ENGINEER

Of a Revolution in Concrete Paving!

Never, no never have we seen the excitement and intense interest shown at the Road Show in the new Butler TX-4 Road Builders Plant. Our deep thanks to every one who visited the Butler Exhibit!

The TX-4 is an entirely new concept in absolutely unprecedented heights of concrete production — designed greatly to *accelerate* the Multi-Billion Dollar Highway Program.

Planning for concrete paving has been generally concerned with batching facilities to match two dual drum pavers — *but the Butler TX-4 will easily handle FOUR!* . . . even more if batch trucks can keep up.

The contractor's entire approach to paving will be seriously re-evaluated in the light of the Butler TX-4. Costs will be drastically cut . . . and so will paving schedules.

The TX-4 apart from its gigantic batching capacity is ultra portable. No other plant approaches it in dismantling, shipping and erection simplicity.

The TX-4 is completely automatic — batches 4 batches each of 2 sizes of stone, 4 batches of cement and 4 batches of sand — simultaneously — and with ONLY ONE OPERATOR!

But is the TX-4 only for the large contractor? Most emphatically, "No!" The contractor with just one paver can buy the Basic Unit *at less cost than conventional one-paver plants.* Just 2 bins (one compartmented for coarse and fine stone and the other for cement and sand).

So whether you're big or not, the BUTLER TX-4 is *your* plant. It can be made to meet every production requirement —one paver, two, three or four.

You start moderately — and grow with BUTLER.

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

the hollow stem after rock has been reached. The center plug is removed and a diamond bit core barrel is lowered into the auger; standard core drilling procedure is then followed, states the maker.

The auger is available in 7 to 10 in. od, 2¾ to 6 in. id, and in lengths from 2 to 10 ft. MOBILE DRILLING, INC., 960 N. PENNSYLVANIA ST., INDIANAPOLIS, IND.

Backing of Dry Adhesive Makes Tile Laying Easy

A floor tile with factory-applied dry adhesive backing now is available. It be applied to any smooth surface, such as linoleum, paint or concrete. The tile requires no rolling after installation, nor is a drying out period required before use.

Called "Peel 'N Stick," the pressure-sensitive adhesive is applied at the factory. It is laid by pulling off a protective backing and sticking the tile to the floor. The dry adhesive eliminates noticeable seams and the problem of cleaning up adhesive flows between the points. The result is a smoother floor.

The dry adhesive backing has lasting holding strength, and the tiles can be removed and re-used and still retain their grip and tightness, according to the manufacturer.

The tile is available in all colors and patterns in both ⅛ in. and 0.080 in. vinyl and ⅛ in. rubber. ROBBINS FLOOR PRODUCTS, INC., TUSCUMBIA, ALA.

Italian Periscope Level Has New Features Added

Some features have been added to a new model of the Italian-made periscope level that uses a suspension device for automatic fine-leveling (ENR Sept. 22, 1955, p. 34).

In the new Model 5190 the three-wire suspension system is applied to the reticle instead of the object lens. With the instrument roughly leveled (within a range of 10 min), automatic leveling by gravity operates for fine leveling, according to the manufacturer.

Check of correct setting may be had either from the outside, by means of a circular bubble, or in the telescope field by means of reference marks that limit the range in which the suspended

Tiny Tractor for Special Jobs

A new model R-9 "Speedcat" tractor and bulldozer has been introduced in the midget tractor field.

The manufacturer claims that the machine is a redesign of earlier models and includes a number of innovations including in-line transmission with three speeds forward and one reverse, mechanical steering.

Without attachment, the tractor is only 36 in. wide and 62 in. long, and weighs only 1,150 lb. Yet, the manufacturer says, it has a 1,300 lb draw bar pull and will handle jobs assigned formerly to larger and more expensive machines.

The machine is powered with an 8 to 9 hp gasoline engine and can mount numerous attachments including a front-end shovel and dozer blade. MEAD SPECIALTIES CO., 4114 N. KNOX AVE., CHICAGO 41, ILL.

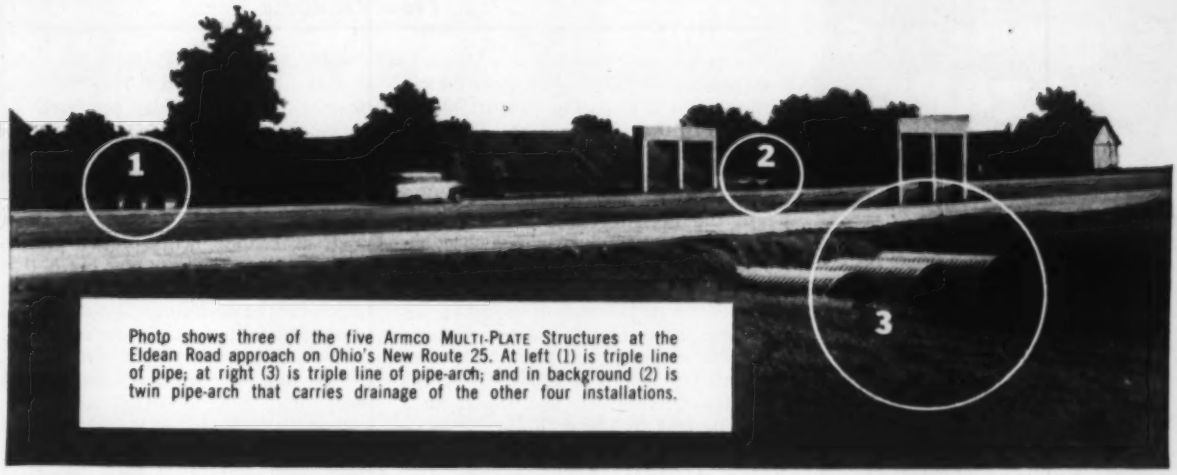
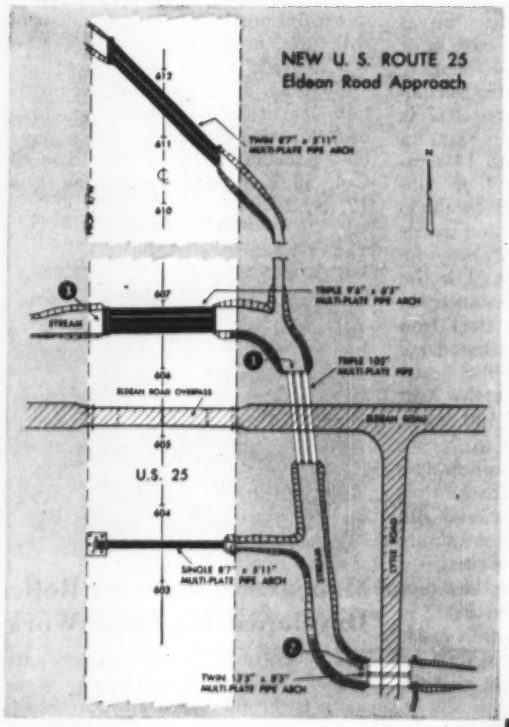


Photo shows three of the five Armco MULTI-PLATE Structures at the Eldean Road approach on Ohio's New Route 25. At left (1) is triple line of pipe; at right (3) is triple line of pipe-arch; and in background (2) is twin pipe-arch that carries drainage of the other four installations.

How Armco MULTI-PLATE helped solve complex drainage problem on Ohio's first super freeway



Now under construction, Ohio's first super freeway will be new Route 25, connecting Cincinnati and Toledo. Many Armco drainage and construction products are being installed on this highway.

One of the more interesting projects is north of Troy, where the Eldean Road is being relocated to pass over new Route 25. Here, two ravines drain across the freeway site, then join and intersect the Eldean Road. South of the overpass site another ravine crosses. All three waterways then merge and go under another secondary road. To solve this drainage problem, a total of eleven lines of Armco MULTI-PLATE® Pipe or Pipe-Arch were used in five locations. (Map shows details.)

All design work and supervision of construction on the Route 25 project is handled by the Ohio Department of Highways.

Armco MULTI-PLATE Pipe and Pipe-Arch are two of the many Armco drainage and construction products used on major expressways as well as secondary roads all over the country. For complete information on these products, write us. Armco Drainage & Metal Products, Inc., 4087 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.
In Canada: write Guelph, Ontario.
Export: The Armco International Corporation.

D. R. SMALLEY & SONS, INC.—Contractors
Eldean Road Approach

ANGUS L. PURDY—Division Engineer
Ohio Department of Highways

JAMES L. ANDREWS—Project Engineer
Ohio Department of Highways

ARMCO CONSTRUCTION PRODUCTS

STUMBLING HAZARD ELIMINATED

Spilled materials on a solid walkway caused workmen to stumble and turn ankles. Installation of 80% open Irving Mesh Grating allowed materials to fall through and minimized the hazard.

★

For Safe, Strong, Slip-Proof Stair Treads Specify

IRVING "VIZABLEDG" TREADS

★

Manufacturers of Riveted, Pressure-Locked, and Welded Gratings of Steel, Aluminum and other metals.

"A FITTING GRATING FOR EVERY PURPOSE"

IRVICO

IRVING SUBWAY GRATING CO., Inc.

Originators of the Grating Industry

Offices and Plants at
5083 27th St., LONG ISLAND CITY 1, N. Y.
1863 10th St., OAKLAND 23, CALIFORNIA

haircross may oscillate. A built-in micrometer, for reading fractions of rod intervals to 1/50 mm or to 1/10,000 ft, has the scales visible in the telescope field.

Mirrors, instead of the prism in the older model, convey an upright image into the upright telescope.

The standard instrument has an object lens power of 30X and a stadia ratio of 1:100. Accuracy to within 13/10,000 ft per min is possible, according to the manufacturer, if readings are taken on high precision invar rods.

The instrument is equipped with a wooden carrying case and tripod for a total weight of about 40 lb. Price is $700. FILOTECNIA SALMOIRAGHI, INC., 41-14 24TH ST., LONG ISLAND CITY, N. Y.

Burning Concrete

New torch can cut through concrete, masonry material

Linde Air Products Co. now has available an oxy-acetylene torch, which, combined with a powder cutting technique, has come out of nearly 15 years of experimentation. (An initial discussion of the method appeared in ENR Sept. 6, 1956, on p. 80.) Results reported by company engineers include piercing a 12 ft thick concrete wall to accommodate an 8 in. pipeline, in 1 hour and 15 minutes; and cutting 960 lin ft of reinforced concrete wall, varying in thickness from 10 to 24 in., at cutting speeds averaging 1¼ in. per minute.

Key feature of the new tool is the powder process, somewhat similar to that used in cutting stainless steel. Iron powder is fed into the cutting flame to increase the intensity of the heat—company engineers say that the heat produced is in the range of 4,500 deg F.

For cutting masonry up to 18 in. thick, the device consists of a blowpipe, held in a nozzle equipped with controls for feed of fuels to the flame, and also the injection of the iron and aluminum powder used in the process. If the cut is to be deeper than 18 in., the blowpipe is replaced by a lance, up to 18 ft in length and somewhat narrower in inside diameter than the blowpipe. Cuts up to 12 ft deep have been made with the lance attachment.

In either case, cuts made on an edge of the material can be started with the cutting flame directly. But to make a cut into the face of the material, a drilled or chipped starting hole is required. Once the flame cut has started, it can be accurately directed to form curved or straight cuts, much as in cutting metal.

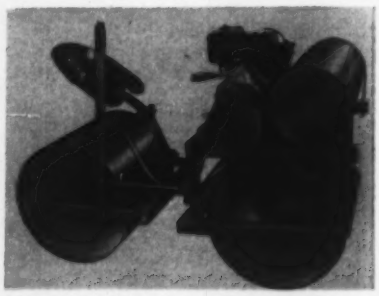
When a hole is being cut horizontally, or in an upward direction, the heat and blast torch will keep the hole clear of the molten slag produced by the cutting action. A hole driven downward, however, must be cleared by periodic jets of compressed air.

Two immediate problems exist in handling the tool—neither of them rated as serious, with proper precautions, by Linde engineers. One is that the action produces a non-toxic smoke, which can be controlled by adjustment of combustible materials; the other that the hot slag produced is a fire hazard, which may be minimized by suitable shielding.

• **Uses**—At the moment, Linde's engineers have considered their new tool basically as a demolition instrument.

However, other uses have started to suggest themselves. One of these is as a substitute for blasting in cramped spaces, particularly where surrounding buildings make blasting hazardous or undesirable. Since the tool works just as well—say the engineers—in natural rock, or any kind of masonry, it could be used to take out small outcroppings in excavations being made beside other structures, or to bring a road right-of-way to grade in a congested area.

Building alteration and reconstruction—particularly in heavy, warehouse or factory-type structures—also seems to be a possibility. LINDE AIR PRODUCTS CO., 30 EAST 42ND ST., NEW YORK 17, N. Y.



Maneuverable Power Roller Developed for Close Work

New entry in the field of very small —but versatile—construction equipment is the Easy Roll power roller, designed especially for work on driveways, sidewalks and parking areas, as well as for landscaping work.

The machine is powered by a 3.5 hp gasoline engine, has a reverse gear, and carries two 24 x 24 in. compaction rollers and a 15 gal sprinkler tank for use in asphalt work. Unmanned, the machine weighs 1,475 lb. W. WHITNEY STUECK, INC., OLD SAYBROOK, CONN.

Take a New Look at Tournatractor

Consider these many advantages on your work, now and in your future:

Power...208 hp — more than any crawler tractor in its class...with less pounds-pull in the starting speeds, but more pounds-pull in the working speeds used most of the time. Operators work at higher speeds, with more yardage moved per day.

Traction...greater than ever! New, optional wide-base tires give still more ground contact area and better flotation in many soil conditions. Additional traction, when needed, is easily obtained by hydro-flating.

Speed...forward to 17.4 mph, and reverse to 7.3 mph. Instantaneous shift through constant mesh...no loss of momentum. Instant controls. Anti-friction bearings throughout power train cut power loss, give more use of speed.

Mobility...Tournatractor travels twice as fast as crawlers to reach on-the-job assignments and to travel job-to-job under its own power. Saves time and cost of hiring flatbed haulers and extra help to load and unload.

Shifts instantly...no stops, no lost momentum...gear ratios changed instantly by Tournatractor's constant-mesh transmission. Saves at least 5 seconds on every gear shift, as much as 80 minutes per 10-hour day.

Torque converter...a simple, trouble-free, low-pressure unit with single impeller, reactor, and turbine. Eliminates shock-loads, automatically increases engine torque to match load, provides unlimited speed-flexibility, increases operator efficiency.

Husky, all-welded case...provides a sturdy base. Moving parts are held in perfect alignment, last longer. All parts easily accessible through handy cover-plates. No independent oscillating assemblies to spring out of line.

Anti-friction gear-trains... heavy-duty, precision-cut gears mesh smoothly. Special heat-treating produces wear-resistant surface on tough cores. Constant oil-bath reduces wear. Shafts ride on anti-friction bearings, reducing power-loss and wear.

Grouped lubrication through fewer fittings, oil enclosures, and far fewer moving parts, combine to save operator about 5 min. work-time each shift. Sealed protection keeps abrasive dust, mud, water and other elements sealed out...lubricants sealed in. Saves lubricants, saves time, saves wear.

4 tires vs over 500 track parts... four tough tires eliminate multitudes of exposed wearing parts such as track rollers, bushings, pins, shoes, and seals. Reduces service, cuts costs.

Safe to operate...low center of gravity, all-around visibility, accessibility and quick response of controls, make Tournatractor exceptionally safe to operate. Multi-disc air brakes have *four times* the braking surface of most heavy-duty tractors.

Interchangeable equipment...Bulldozer, Angledozer, Root-Rake, Snow-Plow — all interchangeable — extend Tournatractor usefulness in a wide work-range. Tilt-mechanism and down-pressure attachment on dozer also available. Tournatractor pulls any type drawbar equipment.

Tournatractor can tackle tough jobs, such as breaking up rock-seams, pavement, etc. Faster push and return save time. On long cycles, on-job and between-job moves, Tournatractor speed is doubly important.

Tournatractor's sealed power-train permits travel through water, mud, dust without loss of power. Lubricants are not washed away nor filled with abrasives. Maintenance is less since 4 wheels do work of 500 track parts.

Tournatractor takes shortest route to job, via highway or cross-country. It drives through city streets without interference to traffic . . . big, low-pressure tires do no damage to blacktop, curbs, or railroad-tracks.

Tournatractor travels and works over any type of footing to clear land, push-load scrapers, dig ditches, spread fill, stockpile materials, maintain haul roads, back-fill around culverts, pull other equipment.

See Tournatractor work on one of your own jobs

The best way to judge today's improved Tournatractor is to see it in action on one of your own jobs. Why not give us a call? We'll be glad to arrange a demonstration on your regular work. Only in this way can you really compare your bonus profit possibilities with Tournatractor to those with your present heavy-duty tractor equipment.

Tournatractor, Angledozer—Trademark Reg. U.S. Pat. Off. CT-1104-G-bw

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

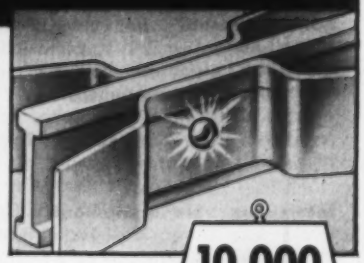
GOLD NUGGET®
WELDED *grating*
PAT. PENDING

Realizing the need for an improved heavy duty, open steel floor grating of greater strength and economy, The GLOBE Company presents GOLD NUGGET Welded Grating the first grating to take advantage of modern engineering design. As a result of this improved design, the GOLD NUGGET primary load bar provides 22% more strength with 14% less weight. The primary load bar is a miniature I-beam with all of the advantages of a true structural member.

GOLD NUGGET Welded Grating is recommended for power houses, loading docks, oil refineries, fire escapes, drain grates, plating rooms, filtration rooms and for all types of heavy duty platforms.

GOLD NUGGET

- ★ ¾" projection weld nugget for greater rigidity and strength
- ★ vertical alignment of the main load bars assured
- ★ all bars are load carrying bars including secondary bars
- ★ anti-skid pattern



10,000 POUNDS

PROJECTION WELD

Each secondary load bar (A), as projected welded to the primary load bar (B) has a shear strength of 5,000 pounds per weld. There are 28 such projection welds to a square foot of grating. This means that GOLD NUGGET Welded Grating can sustain greater shock loads than other gratings.

For the complete details of this revolutionary new grating, write for new catalog today. Distributors in all principal cities. Consult the yellow pages in your phone book under "GRATING."

The GLOBE Company
MANUFACTURERS SINCE 1914
PRODUCTS DIVISION

SAFETY GRIP-STRUT GRATING • GOLD NUGGET WELDED GRATING • CABLE-STRUT AND GLOBETRAY CABLE RACEWAYS
4045 SOUTH PRINCETON AVENUE • CHICAGO 9, ILLINOIS

Publications

Translighted ceilings—An illustrated discussion of luminous ceilings outlines the advantages of this means of illuminating and describes briefly how it can be used in conjunction with sprinklers, air conditioning and acoustical treatment. Thermotank, Inc., Lumenated Ceiling Division, 1469 Algonquin Ave., Detroit 15, Mich.

Reinforced plastics—A new 74 frame color slide film has been produced by the Reinforced Plastics Division of the Society of the Plastics Industry. The film, "Designing with Reinforced Plastics," and the accompanying script show the latest developments in processing and the new and coming uses of reinforced plastics. Explained are the physical and economic reasons for the increasing use of these materials in industry. $15.00. THE SOCIETY OF THE PLASTICS INDUSTRY, INC., 250 PARK AVE., NEW YORK 17, N. Y.

Luminaires—A 4-page illustrated bulletin on Benjamin Electric's panel lighting systems illustrates and explains some construction features that facilitate installation, cut costs and improve appearance. Schematic drawings show a simplified finishing method. BULLETIN AD-6612, BENJAMIN ELECTRIC MFG. CO., DES PLAINS, ILL.

Alkalies and chemicals—A 56-page illustrated booklet contains detailed information on the Solvay line of alkalies and chemicals. The "Products Book" includes data on uses, markets, physical and chemical properties of the line. Dept. PB, THE SOLVAY PROCESS DIV., ALLIED CHEMICAL & DYE CORP., 61 BROADWAY, NEW YORK 6, N. Y.

Structural wood—Technical data on roof trusses, bridge stringers, post-and-beam construction, outdoor movie-screen towers, falsework and other structural timber items are included in a 12-page illustrated catalog. Rilco Laminated Products, Inc., W-891 First National Bank Building, St. Paul 1, Minn.

Plastics in building—A 15 minute sound and color movie details the construction of Monsanto's application research center in St. Louis, highlighting the numerous ways in which plastics were used. Professionals and students of architecture and engineering can borrow the film free. ASSOCIATION FILMS, 347 MADISON AVE., NEW YORK 17, N. Y.

(*Publications continued on next page*)

SPEED...

behind full blades... gets work done fast on Kansas Turnpike

123 hp Adams 550 blades base "on-the-run", helps rush completion of Kansas Turnpike section for contractor J. D. Armstrong.

Work on the Kansas Turnpike is now complete . . . linking Kansas City, Lawrence, Topeka, Emporia, and Wichita with Missouri's road system on the East, and Oklahoma's to the South. Construction of this modern, $160,000,000 highway included 236 miles of preparatory grading . . . 176 miles of asphaltic surfacing . . . 60 miles of concrete paving. Completion of the new toll-road required many thousands of work-hours by motor graders.

Just-right speeds boost earnings

To get highest grader output per hour — and thereby cut grading costs — many Turnpike contractors equipped their fleets with 15-speed, Adams graders. Adams' wide range of power-speed combinations let operators match speed and power to load. Just-right speeds made every hour count.

Work full-power 32 to 572 ft. per min.

All 80 to 150 hp Adams graders give you *15-speeds** — 8 forward, 4 reverse, 3 optional creeper gears — so your graders can work, maneuver, and travel at fastest, most productive rate. For normal grading work, Adams gives you 4 working speeds under 6.5 mph. This provides *extra* combinations of power and speed to push bigger, heavier loads . . . to cut deeper . . . to work faster and with greater accuracy than comparable machines.

For added flexibility, optional *creeper gears* permit full-power operation at speeds as slow as 32′ per minute. Creepers give you extra push-power for ripping up asphalt, hardpan, and clay. They deliver precisely controlled power for work in rocks and roots. They provide low-low speeds for extra-fine grading and maneuvering in close-quarters.

Higher travel speeds cut waste time

Adams graders also boost output, reduce non-productive time, with 2 *high back-up speeds* — to 13.7 mph. Fast reverse saves time on shuttle grading; boosts output as much as 30% on one-way work. And *high forward travel* speeds — to 26 mph — save time moving between scattered assignments as well as on job-to-job moves.

SEE FOR YOURSELF! . . . how Adams' accuracy and big capacity for hard work can increase your earnings. Six models, 60 to 190 hp. Call us or write for a demonstration.

**Adams 190 hp* POWER-*Flow 660* provides an infinite number of power-speed combinations thru torque converter. 60 hp model "220" has 10 speeds, with optional creeper gears.*

Amis Construction Co., of Oklahoma City, Okla., uses one of its 6 Adams 150 hp 660 graders to spread fill on Kansas Turnpike.

Adams, POWER-Flow—Trademark AG-1274-H-b-5

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

ACRES OF DAYLIGHT

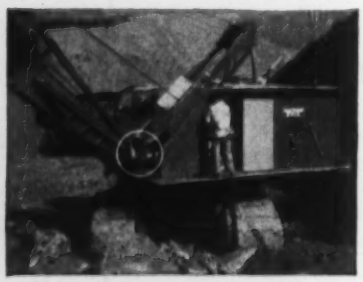
for the night shift with ONAN power

For night lighting on big projects an electric plant should combine high capacity with mobility . . . *high capacity* to handle a bank of powerful floodlights . . . and *mobility* to simplify frequent moving on the job site.

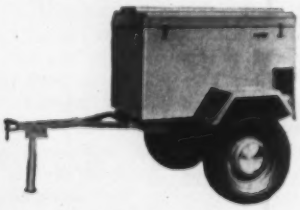
The Onan 10CW electric plant meets both requirements. It delivers 10,000 watts A.C., yet it weighs only 800 pounds. It is completely Onan-built, with a heavy-duty Onan 2-cylinder, gasoline engine direct-connected to an Onan all-climate generator in a permanently-aligned, compact, long-life unit. Starts instantly in any weather. Air-cooling eliminates trouble from freezing or leaking coolants. Available also as a 7,500-watt unit.

Put these mobile, high-capacity units to work on your next lighting job.

Onan 10CW mounted on a portable, skid-mounted floodlight tower. This unit is being used for night operations on a St. Lawrence Seaway project.



Onan 3KW Series 3DSP Diesel electric plant mounted on shovel—lights cab and work area.



Trailer-mounted 10CW. Tow it anywhere behind car or truck. Weatherproof housing.

500 to 75,000 watts

Lightweight, portable, gasoline-powered plants: 500 to 10,000 watts. Water-cooled plants: 10,000 to 75,000 watts. Air-cooled Diesel Plants: 3,000 and 5,000 watts.

See your Onan distributor or write for specifications

Onan ELECTRIC PLANTS

D. W. ONAN & SONS INC.

3045 University Ave. S.E., Minneapolis 14, Minnesota

. . . Publications

Double-tee slab forms—The manufacture of precast concrete double-tee slabs by use of inexpensive new forms is outlined in a bulletin issued by the Irvington Form and Tank Corp. Primarily for non-prestressed slabs spanning from 20 to 40 ft, the forms are described in terms of their economy and versatility. IRVINGTON FORM AND TANK CORP., 20 VESEY ST., NEW YORK 7, N. Y.

Lighting systems—Wakefield luminous ceilings, modular lighting equipment, pendant fixtures and high-frequency lighting are described in a 1957 catalog. Text is supplemented by photos, drawings and engineering data on the various systems. WAKEFIELD CO., VERMILION, OHIO.

Metal castings—A 64-page publication issued by Meehanite Metal Corp. outlines foundry practices which must be considered in casting design. Profusely illustrated, the bulletin weighs the pros and cons of various design features from the production viewpoint. The text gives general rules for design and takes up, in turn, (1) casting strain; (2) pattern making, and (3) molding and coremaking. MEEHANITE METAL CORP., 714 NORTH AVENUE, NEW ROCHELLE, N. Y.

Wire rope—Designed for quick, accurate selection and ordering of wire rope slings, John A. Roebling's Sons Corp. has just issued its new "Wire Rope Slings and Assemblies" catalog. The 50-page booklet features a new coding system for easy location of items desired. JOHN A. ROEBLING'S SONS CORP., TRENTON 2, N. J.

Drill bits—Catalog No. 765 lists products including carbide rock bits, drill steels and pneumatic tool accessories such as moil points, sabur points, clay spades and the like. Photos and complete specifications are given. BRUNNER & LAY INC., 9300 KING ST., FRANKLIN PARK, ILL.

Electronic computer—A six-page bulletin describing the Bendix G-15D general purpose digital computer and its digital differential analyzer accessory is available. Programming techniques and a complete new line of input and output equipment also are covered. BENDIX COMPUTER DIVISION, BENDIX AVIATION CORP., 5630 ARBO VITAE ST., LOS ANGELES 45, CALIF.

Signs—A catalog including many directional symbols, advance warnings, approach warnings and other signs for use in construction work is now available. GROTE MFG. CO., INC., BELLEVUE, KY.

Plastics applications—A revised 1957 edition of the "Condensed Reference File of Bakelite Plastics" has been published by the Bakelite Co. Designed as a reference for industry, the 16-page booklet defines appropriate fabricating techniques, distinguishing characteristics and major fields of application for six different groups of plastics polyethylenes, vinyls, phenolics, styrenes, epoxies and polyesters. More than 80 photographs and sketches illustrate some typical uses of these materials. BAKELITE CO., 30 E. 42ND ST., NEW YORK 17, N. Y.

Steel prefabs—Armco truss-roof steel buildings are briefly described in a 6-page folder. Outline specifications show available spans, lengths, heights, door and window types. Wall and roof materials are also shown. ARMCO DRAINAGE AND METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

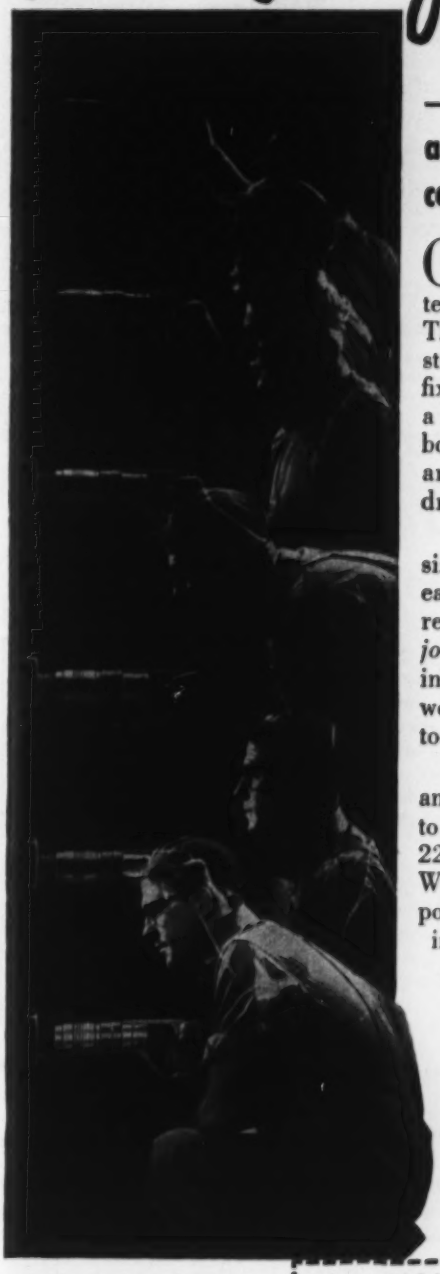
Metal doors and grills—Drawings, specifications and photos accompany product descriptions in a 12-page catalog of the Cornell line of metal rolling doors, fire doors, shutters, rolling and sliding grills, and escalator enclosures. CORNELL IRON WORKS, INC., 13TH ST. AND 36TH AVE., LONG ISLAND CITY 6, N. Y.

Aluminum insulation—Charts, graphs and examples on the calculation of heating and cooling costs occupy about a quarter of Alcoa's 48-page "Comfort Everybody Can Afford." Much of the information was obtained in an Alcoa-sponsored research project completed last September at Pennsylvania State University. The booklet also incorporates a discussion of four fundamentals of indoor climate control: sun-load control, insulation, ventilation, and moisture control. Other sections of the book include illustrated instructions for applying aluminum-clad insulation, and historical information on home insulation and the entry of aluminum and aluminum products into the field. ALUMINUM CO. OF AMERICA, ALCOA BUILDING, PITTSBURGH 19, PA.

Lumber suppliers—A 44 page publication from the West Coast Lumbermen's Association lists the mills and fabricating and treatment plants that produce lumber from Douglas fir, West Coast hemlock, Western red cedar and Sitka spruce. The location, capacity, facilities, species handled and type of stock of each mill is listed. WEST COAST LUMBERMEN'S ASSOCIATION, 1410 S. W. MORRISON ST., PORTLAND 5, ORE.

(Publications continued on next page)

ONE MAN- ONE TOOL- ONE MINUTE-



—and 6 fastening studs are securely set in concrete or steel!

GIVE A MAN the Remington Stud Driver and that fastening job's practically done! This compact tool sets up to 6 studs per minute . . . anchors fixtures to concrete or steel with a squeeze of the trigger. It sets both ¼" and ⅜" diameter studs arrow-straight — with no predrilling required.

Change-over from one stud size to the other is quick and easy. Operator can change barrels in 90 seconds, *right on the job*. There's no time lost in going from medium- to heavy-duty work — no need for a second tool.

There are 40 different styles and sizes of Remington Studs to choose from and a variety of 22 and 32 caliber power loads. With studs and cartridges in pocket, Remington Stud Driver in hand — you're ready for *every* stud-fastening job. Find out how the tool saves time and money in fastening wood sleepers, furring strips, metal window frames and other fixtures by mailing coupon below.

Remington

DU PONT

STUD DRIVER

Industrial Sales Division E.N.R. 3
Remington Arms Company, Inc.
Bridgeport 2, Conn.

Please send me your free booklet which shows how I can speed the job and save with the Remington Stud Driver.

*Name*_____ *Position*_____

*Firm*_____

*Address*_____

*City*_____ *State*_____

No load is big enough to stall the engine when the tractor has a National Supply torque converter. 17 basic sizes available to match exactly engines of 100 to 1000 horsepower.

Easy way to tell if a heavy-duty machine needs a torque converter

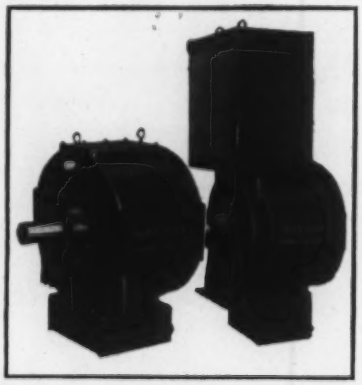
You can tell simply by listening to the engine while the machine is operating. Does it run fast—then slow down as the load builds up—then drop off to idling speed—then start all over again? If so, a National Supply torque converter would probably make the machine make more money for you.

A National Supply torque converter lets the machine work at full capacity all the time. The engine never labors or stalls because of overload. Instead, it runs continually in its best speed range and delivers its full horsepower at all times.

The torque converter automatically increases or decreases the flow of power as required by each change in the load. Many little delays and losses are eliminated.

Your machine gets more work done in a day. Also, because of the shock-cushioning effect of the National Supply torque converter, there's less engine maintenance . . . less wear and tear on equipment.

If you operate heavy-duty machinery, you should look into torque converters. National Supply, with experience in the application of high-power fluid transmission since the 'thirties, can help you. Write to have a National Supply engineer analyze your problem and figure the results you can expect from a torque converter. The National Supply Company, Two Gateway Center, Pittsburgh 22, Pennsylvania.



National Torque Converters are manufactured with or without integral cooling systems.

THE NATIONAL SUPPLY COMPANY

INDUSTRIAL PRODUCTS DIVISION

Two Gateway Center, Pittsburgh 22, Pa.

Pace-setters in the progress of industrial power transmission

. . . Publications

Air hammer and accessories—The Ramex air hammer, model AR-4, and its accessories are described in a 4-page catalog. Specifications, performance and specific applications are noted. Forty tools and accessories used with the hammer are shown in a supplementary 4-page price list, which also includes specific size data and a drawing for each accessory. E. V. Nielsen, Inc., 129 Broad St., Stamford, Conn.

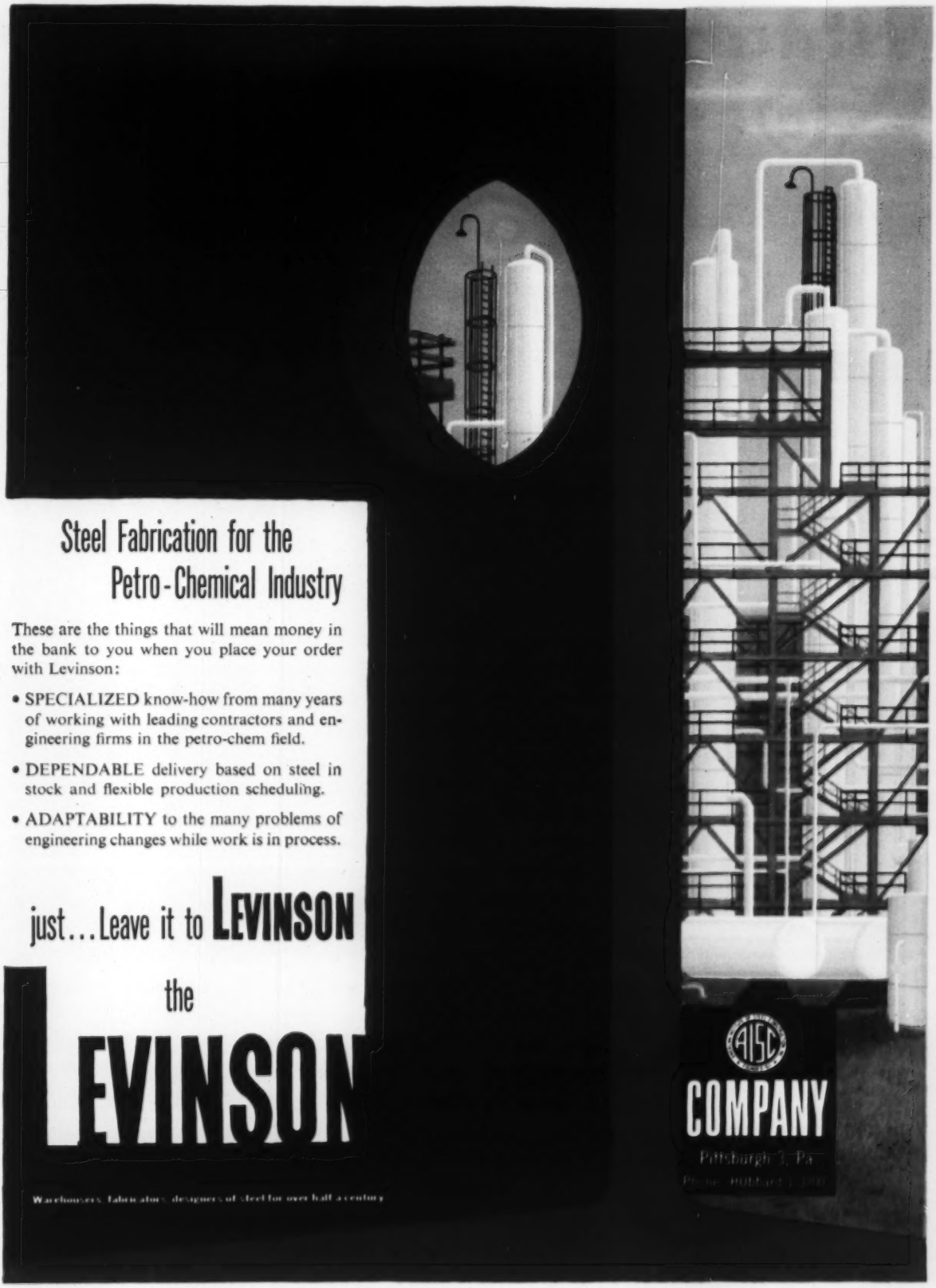
Vermiculite plaster—The Zonolite Co. has made available an 8-page data booklet on vermiculate plaster and acoustical systems. It contains suggested specifications, a summary of fire tests on vermiculite systems, and information on the use of vermiculite in plastering and acoustical treatment. Special attention is given to machine methods of applying lightweight plaster. Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill.

Movable metal walls—The Mills Co. catalog for 1957 covers the firm's complete line of movable metal walls. Separate sections of the 68-page catalog display each of the four types—Flush Pilaster, New Executive, Commercial and a new series called Milluminum Partitions. Photographs, detail drawings and cutaways illustrate design and construction features. Accessories and hardware also are described. Mills Co., 993 Wayside, Cleveland 10, Ohio.

Chain slings—Republic Steel has issued a 42-page catalog on chain slings and related fittings and accessories. Drawings and diagrams are incorporated to explain the terminology and assist buyers and users in specifying. Chain slings listed include single, double, triple and quadruple types, plus a variety of other standard and special types. Also included is a section outlining the proper use and care of the equipment. Form No. ADV.-719, Advertising Div., Republic Steel Corp., 3100 E. 45th St., Cleveland 27, Ohio.

Porcelain building products—An 8-page 1957 catalog describes the Seaporcel line of porcelain building materials. Displayed in the catalog are insulated curtain-wall panels and porcelain panels for building exteriors and interiors. Numerous construction details are included. Seaporcel Metals, Inc., 28-20 Borden Ave., Long Island City, N. Y.

Air diffusers—Louvers, diffusers and mixing chambers for use in air-conditioning systems are briefly described in a 4-page 1957 products bulletin. Thermotank, Inc., 11191 Lappin Ave., Detroit 34, Mich.


Steel Fabrication for the
Petro-Chemical Industry
These are the things that will mean money in the bank to you when you place your order with Levinson:
• SPECIALIZED know-how from many years of working with leading contractors and engineering firms in the petro-chem field.
• DEPENDABLE delivery based on steel in stock and flexible production scheduling.
• ADAPTABILITY to the many problems of engineering changes while work is in process.
just...Leave it to LEVINSON
the
LEVINSON
AISC
COMPANY
Pittsburgh 1, Pa.

Which Diesel is "Public

It's GM . . . America's First Choice Diesel . . . and here's why:

On countless projects—both construction and maintenance of essential public services—you find General Motors Detroit Diesel engines powering more different kinds of equipment than any other Diesel.

Reason for this high preference is that these compact 2-cycle Diesels get work done faster at lower cost—in road graders, snowplows, excavators, trucks, tractors, pumps, railway equipment and other mobile and stationary uses. They also power work boats, fishing vessels and pleasure craft.

And now winning the acclaim of users who want higher output are Detroit Diesel's great new Turbopower engines. *These new GM Turbopower Diesels develop up to 17% more power on no more fuel—or the same power with 15% less fuel!*

Because of greater efficiency, and the fact they fit where bulkier engines won't, GM Detroit Diesel engines are installed by over 150 manufacturers in more than 1,000 different applications of power machinery. They step up output and cut fuel and maintenance bills on any job from 30 h.p. up.

You'll find it always pays to specify GM Diesel in the equipment you buy or repower. It's America's FIRST CHOICE Diesel *because it does more work at less cost!*

Servant" Number one?

Illustrated above are Adams motor grader; Warner-Swasey Gradall; Pettibone-Mulliken Speedall; Four Wheel Drive truck; Seaman-Andwall Trav-L-Plant. Write for list of over 1,000 applications.

DETROIT DIESEL

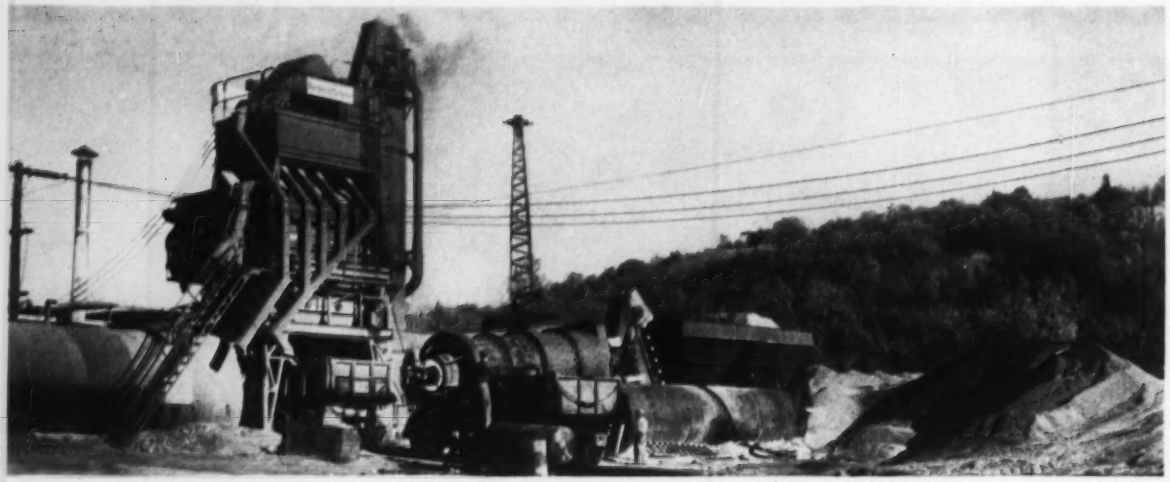
Engine Division of General Motors

Detroit 28, Michigan
In Canada: General Motors Diesel Limited, London, Ontario

Single Engines... 30 to 300 H.P. *Multiple Units... Up to 893 H.P.*

America's First Choice Diesel Engine

On the Massachusetts Turnpike



Bigger tonnages with BatchOmatics

200 tons per hour—that's the kind of production Alexander Construction Co. is getting from its 6000-lb. BatchOmatic. This plant will produce 115,000 tons for a 13.4-mile section of the Massachusetts Turnpike.

Forty miles eastward a 4000-lb. BatchOmatic—one of three owned by Bayer & Mingolla—consistently produced at maximum tonnages.

Designed from their original conception for automatic operation, all three Barber-Greene BatchOmatic plants boost production, cut costs and expand the market.

Faster paving with a finisher team

Near Blandford, three Barber-Greene Finishers pave in echelon, laying 10′, 12′ and 16′ strips simultaneously. A fourth finisher paves interchanges.

Barber-Greene Finishers have always had the traction, maneuverability and control to take any job in stride.

And today's improved finisher has more power, paves faster, travels faster with lower maintenance cost. This is the finisher that sets the pace for quality paving over the world—the finisher that is now paving its second million miles—more than all others combined.

Write for information on the world's most modern equipment for building asphalt roads.

57-2-WB

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Pipes Put in Garbage Fill To Burn Off Smelly Gases

The University of Washington has implanted 15 pipes—such as the one pictured—in a landfill near its athletic pavilion at Seattle, to burn off underground gases causing an odor problem. The gases are generated by decomposition of garbage that has become water-soaked after being sunk in a marsh which is being filled to provide land for parking and other purposes.

Containing approximately 37% methane, plus inert gases and sulfur compounds, the gas is burned as it emerges from the upper end of metal pipes installed beneath the surface of the earth covering the garbage. The lower end of each pipe is covered by a cylindrical screen, which maintains a subterranean opening into which the gas collects and goes on up the pipe. An "A" vent at the upper end of the pipe protects the flame on windy days.

The first 15 pipes have worked so well that the university may install as many as 100 more, as the fill is enlarged. Most of the gas comes from garbage deposited before the dump was converted to a sanitary landfill last June. Under the present system, the garbage is compacted and, at every 8 ft level, covered with 1 to 2 ft of earth to lessen odor potential.

Shown with the pipe is Prof. Walter L. Dunn, assistant professor of public health and campus sanitary engineer, who designed the equipment.

Steel Straps Cut Cost Of Tying Column Forms

If economies made so far continue, the contractor now building a $1.3 million nurses' home at Bronson Hospital in Kalamazoo, Mich., will save 350 to 400 man-hours by tying the column forms with steel straps. Seth E. Giem & Associates, Memphis builder on the job, reports that the method has reduced labor for the first two stories of the 6 story reinforced concrete building by 100 man-hours.

The columns involved are 12x12 in x 8 ft and 22x22 in. x 12 ft. Giem's crew, under job superintendent Stan Hall, fabricates the column forms for each story on the slab form immediately above. After nailing the forms together, a two-man crew bands them with a two-piece strapping tool. Then they lower the forms over the column reinforcement, which, at that stage, projects only a short distance above the working platform. As soon as the collars are in place and the forms trued, concrete can be placed.

(Continued on next page)

Glider
BLUE PRINT RACK
FOR ARCHITECTS, ENGINEERS, CONTRACTORS & FACTORIES
NOW Easy to File . . . Easy to Find . . . Your Blue Prints
Patents Pending
20 EXCLUSIVE FEATURES, Including:
ALL STEEL
1. No holes to punch.
2. Insert sets of prints easily.
3. Replace any sheet without removing other sheets.
4. Various sizes of prints accommodated.
5. No protruding ends of clamps.
6. Each plan holder clamp holds 1 to 100 prints.
7. The "Glider" can hold 12 to 18 sets.
8. Clearly visible index shows location of sets.
ALL STEEL construction, but NO INCREASE in price at this time!
DEALER INQUIRIES INVITED
$94.50
F.O.B. Chicago
INCLUDING 12 PLAN HOLDERS
ORDER TODAY OR WRITE FOR BROCHURE
MOMAR INDUSTRIES
4323 W. 32nd St. • Chicago 23, Ill.

Over 85% of the torque wrenches used in industry are
STURTEVANT
TORQUE WRENCHES
Read by Sight, Sound or Feel.
• Permanently Accurate
• Practically Indestructible
• Faster—Easier to use
• Automatic Release
• All Capacities
in inch grams . . . inch ounces . . . inch pounds . . . foot pounds
(All sizes from 0-6000 ft. lbs.)
Every manufacturer, design and production man should have this valuable data. Sent upon request.

EASY, PROVEN WAY
to PERMANENTLY BOND
CONCRETE TO CONCRETE
WELD-CRETE

Weld-Crete is the amazing liquid bonding agent which enables you to *permanently* bond new concrete *directly* to old concrete . . . or to most any other structurally sound surface . . . *without need for costly, time-consuming chipping, drilling, roughening, acid washing or scarifying of concrete base.*

Weld-Crete has equal bonding permanence all climates, all surfaces, all sorts of conditions. When used with quick setting cement topping you can lay new floors, ramps, driveways, etc. one day and run heavy truck traffic over them the next. Get facts from your building materials supply dealer or write Larsen Products Corp., Box 5756-I, Bethesda, Md.

TYPICAL **WELD-CRETE** APPLICATION

National Brick Co., Terra Cotta, D.C.

Here Weld-Crete was used to bond new ¾" concrete topping directly to old, badly chipped and spalled floor slab which had been subjected to ceaseless heavy truck traffic. Plant shut-down time eliminated as Weld-Crete enabled National's own mechanics to do job over week end.

FOUNDATION CONSTRUCTION BY
McKINNEY
DRILLING CO.
BOX 190—LOGAN 4-8373
NACOGDOCHES, TEXAS
CAISSONS
DRILLED & UNDERREAMED
PIERS
WIRE OR PHONE FOR A QUOTATION ON YOUR NEXT FOUNDATION JOB
ANYWHERE IN THE WORLD
OFFICES IN
ATLANTA, GA. • PITTSBURGH, PA.
WASHINGTON, D. C.

DUDGEON HYDRAULIC JACKS
SALES
RENTALS
• CAPACITY TO 600 TONS
FOR:
PILE TESTING
•
UNDER-PINNING
•
BRIDGES
•
PIPE PUSHING
•
SOIL TESTING

Write to Dept. E
RICHARD DUDGEON INC
709 BERGEN ST. • ST 6-4040 • BROOKLYN, N. Y.

Hall says his time studies show that two men can strap a column in five minutes as opposed to 30 minutes required to tie one with metal yokes or clamps. He reports further that strapped forms can be squared easily with a good rap.

When the forms are ready for stripping, the straps are snipped in two.

Welder's Job-Made Huts Stop Pipeline Shutdowns

Pipeline workers for Colorado Interstate Gas Co. are pushing across the frigid, snowswept plains of southern Wyoming with the help of job-made "welder's huts."

The huts were developed by Parker Boggs, assistant superintendent of the pipeline department, after shutdowns because the bitter cold and wind "became alarming as well as irritating."

The pipeline is a 22 in. natural gas transmission line that will run from Green River, Wyo., to Denver. The line is nearly 300 miles long, most of it across barren Wyoming plains that are buffeted constantly by wind and snow during the winter.

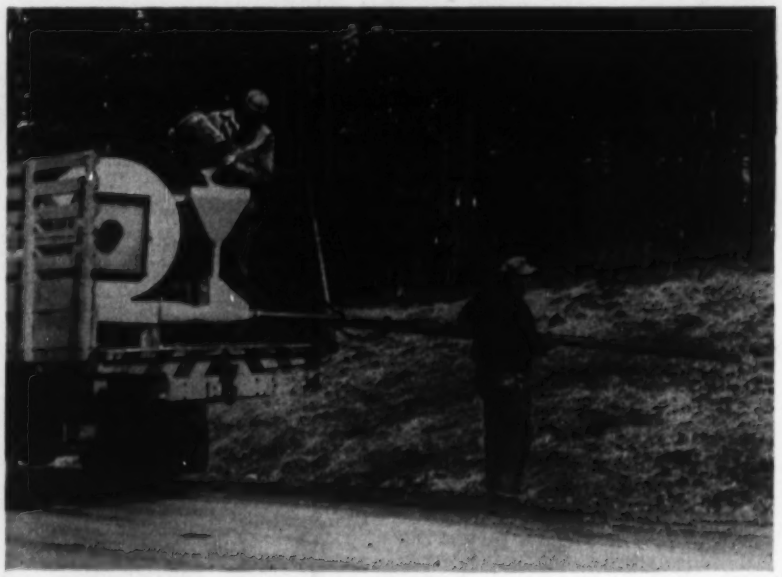
The problem was to provide a portable shelter strong enough to ward off the wind but to give the men sufficient space and light in which to work safely.

The final design is a hut, 8 ft high, 8 ft wide, with a frame of 1 in. angle iron and 1 in. pipe. Plywood is placed on two sides and heavy fireproof canvas on the other two sides. The frames were fabricated in the company's shop at Devine, Colo., and the canvas was fireproofed before it was laced to the frame.

Early in January, there were 24 huts on the Wyoming project and the company estimates that welders have been able to weld 30 miles of pipe through the use of the shelters, instead of having the job shut down. Without shelter, welders have to stop work when the wind velocity gets over 15 miles an hour. The huts, however, have made it possible to continue operations in winds of more than 30 miles an hour.

There is a 16-in. opening in the top of the hut to permit escape of fumes from the electrode. Bridging this opening is an iron ring to which the sideboom tractors are able to attach a hook to lift the huts from one location to another. Each hut weighs about 250 lb.

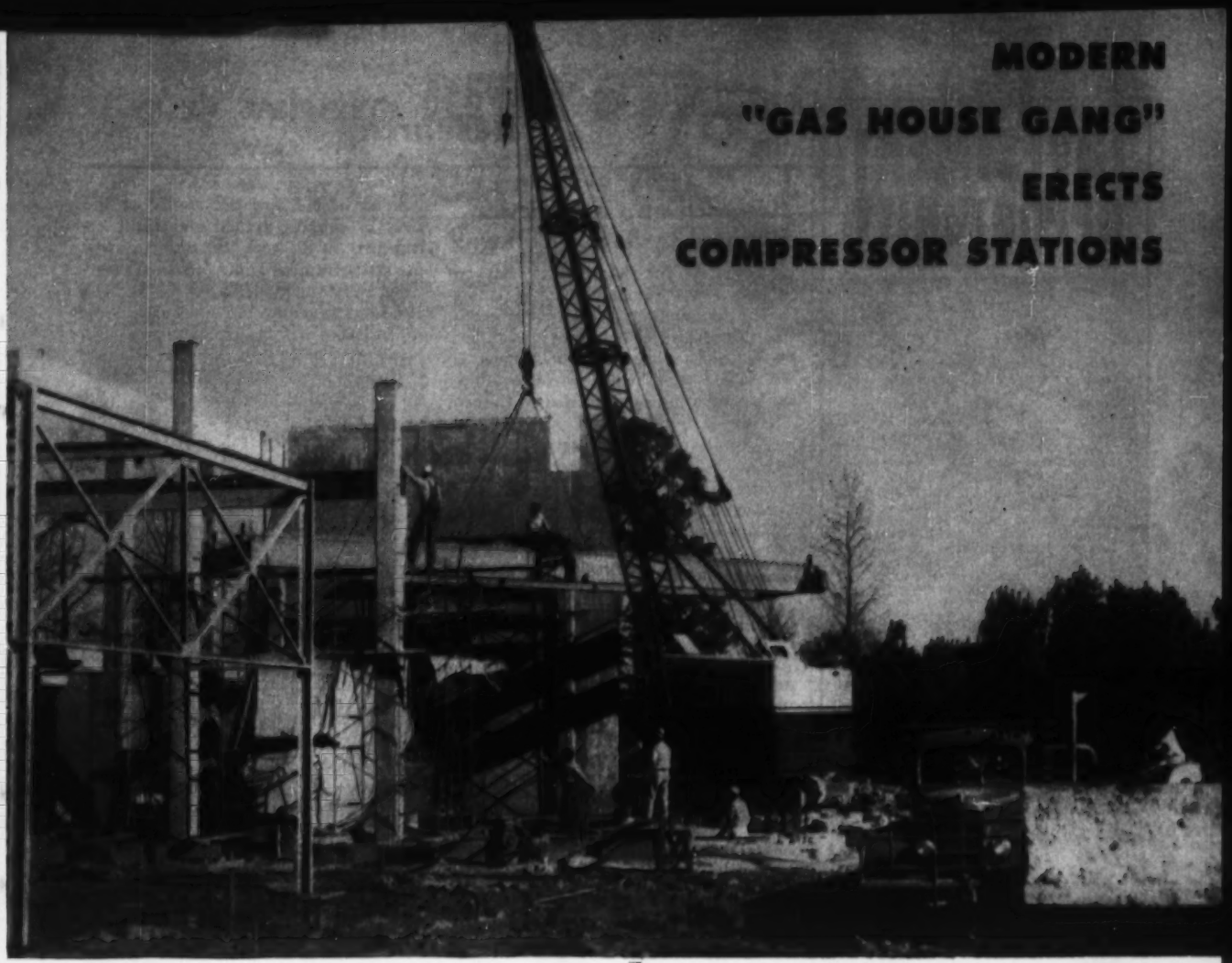
The interior is equipped with outlets for electric bulbs to provide light in the enclosure, the power being provided by the generator that supplies the welding equipment.



Air Power Used to Seed Steep Slopes

A new type of blower for applying grass seed and pelletized fertilizer to steep slopes, costing less than $1,000, has been developed and used by the Virginia Department of Highways.

Operated from the body of a truck, the blower works like a vacuum cleaner, creating suction capable of carrying the materials for a distance of 50 ft through a light, 2½ in. plastic hose. It will seed and fertilize 25 to 35 acres per day, as compared to 6 to 10 acres by the hydraulic method, according to its inventor, L. E. Gervis, landscape superintendent.



MODERN "GAS HOUSE GANG" ERECTS COMPRESSOR STATIONS

A "gang" of Marion 35-M cranes is helping J. F. Pritchard & Co. of Kansas City rush construction of four new compressor stations on a Gulf Interstate Gas Company transmission line.

The 30-inch line originates in southern Louisiana and terminates in Kentucky, where the gas is distributed to customers in Kentucky, West Virginia and Ohio. The new stations are strategically located to add about 20,000 compressor horsepower on the main line to help stabilize pressure when extreme loads are thrown on the line during winter months.

Modern design tilt-up construction of the stations means many maximum lifts for the Marions, and these sturdy 18-ton cranes are meeting the challenges of the job without a strain. The work also requires fast front end conversion from crane to clamshell to dragline. Sincee the Marions convert without machinery changes, construction of the stations has moved at a fast pace.

Fast-acting, easy to operate Marionair Controls have proved valuable on the many precision lifts needed to install heavy and expensive machinery in each station.

Your Marion distributor will be glad to explain how a gang of husky 35-Ms could bear the brunt of your work load. Contact him today!

MACHINE	SHOVEL CAP. IN CU. YDS.	HOE CAP. IN CU. YDS.	CRANE RATINGS CRAWLER MOUNT MAX.* STABILITY	CRAWLER MOUNT MAX. USABLE	TRUCK MOUNT MAX. USABLE
MARION 35-M	¾	¾	18T @ 10′	18T @ 10′	25T @ 10
MARION 43-M	1	1-1¼	27T @ 10′	27T @ 10′	35T @ 15
MARION 362	1½	1½-2	43T @ 12′	30T @ 15′	
MARION 87-M	Special Crane		150T @ 12′	75T @ 15′	
MARION 93-M	2½	—	80T @ 12′	50T @ 15′	
MARION 101-M	3	—	84T @ 12′	57T @ 15′	
MARION 111-M	4	—	110T @ 15′	105T @ 15′	

*For Comparison Purposes Only

MARION POWER SHOVEL CO.

MARION Marion, Ohio, U. S. A.

Please send me bulletin No. 431 on the Marion 35-M.

Name ..... Title .....

Company .....

Address .....

City ..... State .....

(130)

$
INVESTMENT OPPORTUNITY

Make your money earn real profits for you by investing in EFCO Steel Forms for your concrete construction. Original cost is low. Lifetime steel faces should never need replacing.

Owners of EFCO Forms are furnished form erection drawings without cost. These forms are adaptable to wide use, including construction of house foundations, and other large and small form requirements. They are easily and quickly assembled, and can be moved economically from job to job.

Although EFCO Steel Forms are available only on a purchase basis, other forms from Economy are available on a rental basis. Write Economy Forms Corporation, H. P. Station, Box 128, Des Moines 13, Iowa, for catalog and full address of office serving your area.

Other offices are in St. Louis, Mo.; Kansas City, Mo.; Lincoln, Nebr.; Minneapolis, Minn.; Ft. Wayne, Ind.; Milwaukee, Wisc.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Metuchen, N. J.; Rochester, N. Y.; Springfield, Mass.; Waltham, Mass.; New York, N. Y.; Washington, D. C.; Decatur, Ga.; Charlotte, N. C.; Dallas, Texas; Tulsa, Okla.; Houston, Texas; Los Angeles, Cal.; Oakland, Cal.; Denver, Colo.

TEST BORINGS
for
• COAL
• MINERALS
• DAMS & BRIDGES
• BUILDINGS
We bet on the earth.
PENNSYLVANIA Drilling CO.
DRILLING CONTRACTORS AND MFRS.
PITTSBURGH 20, PA.

McKIERNAN-TERRY
WIDE-RANGE LINE OF
PILE HAMMERS AND EXTRACTORS
Now made in complete standardized line of 11 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Also Sand Drain Equipment and Steam Generators.
Write for free descriptive bulletins.
Also builders of coal and ore bridges and unloaders, and specially designed machinery.
McKIERNAN-TERRY CORP.
32 Mercer Street, Dover, N. J.

Research on Construction Planned by Texas College

Texas A. and M. College has announced plans under which it is prepared to conduct a research program for the construction industry.

Research projects, which may be sponsored by individual firms or jointly by several firms, may be selected to serve the needs of the industry in its broadest terms, including manufacturers of construction materials and equipment, contractors or related interests.

Among the projects that might be considered for research are studies of the performance of pile drivers under varying conditions to determine the net energy available for driving piles; studies of the performance of crawler-type against rubber-tired-type tractors under varying conditions; studies of the effects of rolling resistance of haul roads on the cost of hauling earth with scrapers, trucks and wagons.

Other projects that may be undertaken are studies of the cost of hauling earth using different sizes of trucks; studies to determine the best relationships between the sizes and depths of drilled holes and the quantities of explosives used to loosen rock; studies of the effects of varying air pressure on the performance of pneumatic rock drilling equipment; studies of building materials to determine their suitabilities for use in construction.

The combined facilities of the Texas A. and M. Research Foundation and the Engineering Experiment Station—including the college staff, faculty members and graduate students—are available for conducting the research.

Information may be obtained from Archie M. Kahan, executive director, Texas A. and M. Research Foundation, College Station, Texas.

Quality Survey to Set Stream Health "Yardstick"

A survey of water quality in the Delaware River is being undertaken by the Interstate Commission on the Delaware River Basin (Incodel) and the U. S. Public Health Service.

The program calls for the collection of water samples at 17 cross-sectional stations between Trenton, N. J., and Delaware Bay at least once every month of the year. A unique feature will be an effort to establish a stream health "yardstick" for the Delaware River by the Department of Limnology of the Academy of Natural Sciences.

Purpose of the biological yardstick will be to measure the ability of the river to support animal and plant organisms. In its work, the academy will use an instrument known as the Catherwood Diatometer. Placed in a river and holding removable biological slides, it collects diatoms, the microscopic plants that are the first link in the aquatic food chain leading upward from the lowest animal forms to the fishes.

Dissolver for Fluorspar Lowers Fluoridation Cost

Two Public Health Service scientists have come up with a new dissolver that makes it possible to use fluorspar, the cheapest form of fluoride, for water fluoridation. Average cost of fluoridation would be lowered from 10 cents per person to 3 cents, it is claimed. Previously it was not practicable to use fluorspar because of its low solubility.

The device developed—and described in the January issue of the American Water Works Association Journal—by F. J. Maier and E. Bellack enables alum, the clarifying agent used in most water plants, to dissolve the fluorspar.

Public Health Trainees Now Sought by the PHS

The Public Health Service program of public health traineeships is entering its second year. Applications, now being accepted for next fall, should be submitted to PHS by April 1. Traineeships include sanitary engineers, sanitarians, sanitary chemists and biologists. The awards are for only graduate or specialized training.

Annual stipends range from $2,400 to $4,800, plus allowances for dependents and tuition. The individual may select the educational institution of his choice.

Group to Set Standards For Cellular Plastics

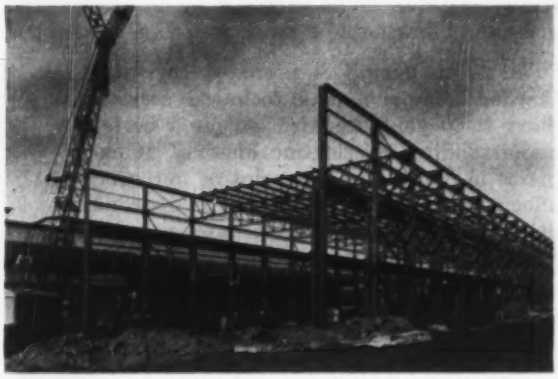
The American Society for Testing Materials, Committee D-20 on Plastics, has organized Subcommittee XX on Cellular Plastics to develop standard methods for measuring the physical and chemical properties of and write specifications for various types and grades of cellular plastics. Such materials found as polyurethane, polyvinyl chloride, polystyrene and polyethylene cellular plastics will be under the AEGIS of the group.

Those interested in participating in the program should write I. T. Stoneback, chairman, ASTM Committee XX on Cellular Plastics, Federal Telecommunications Laboratories, Nutley, N. J.

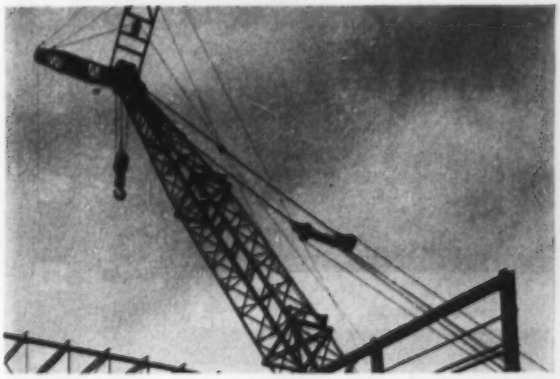
Look where **HIGH STRENGTH BOLTS** give **better connections**

BRIDGES Here's one put up in Detroit with RB&W High Strength Bolts. They were used because they install faster than rivets, stay tight, withstand all kinds of cyclic loads, including wind, vibration.

BUILDINGS More and more multi-story steel framed buildings are being erected with high tensile bolts. It means faster construction, dollar-savings per ton of erected steel, less noise, more safety.



INDUSTRIAL PLANTS Erectors of mills, power houses, heavy industrial works and factories are taking advantage of RB&W High Tensile Bolts to give joints more strength in shear and in tension against impacts and stress changes due to operation of cranes and heavy machinery.



EQUIPMENT RB&W High Strength Bolts are doing a permanent retightening job on heavy duty equipment that has deteriorated due to rivets failing. They've saved large costly cranes. By specifying the use of high strength bolts in your new equipment, you can avoid such problems entirely, save money and downtime.

AISC approves the use of high strength bolts anywhere in place of rivets. Local building codes permit it. So there's no reason why you shouldn't get the savings in time and costs they offer... the better, stronger joints they make.

And remember—the quality and uniformity of RB&W High Tensile Bolts and their conformance to ASTM A325 have been confirmed in a report by the nationally known New York Testing Laboratories, Inc.

Give your men this booklet: "How to work with high strength bolts." Write for as many free copies as you need. Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N. Y.

R B & W

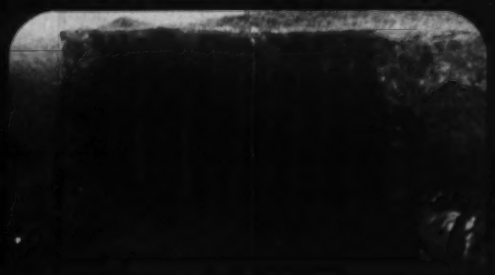
111th year

Plants at: Port Chester, N.Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver. **Distributors** from coast to coast.

LARGEST INDEPENDENT PRODUCER OF HIGH STRENGTH BOLTS FOR CONSTRUCTION

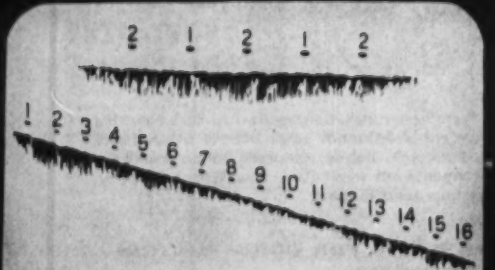
TO HELP YOU BLAST WITH GREATER ECONOMY

The INSIDE STORY



See how modern blasting methods improve breakage

See how the point of initiation affects rock movements...controls throw



See the difference between progressive and alternate detonation

Don't miss this movie for men who use explosives in Quarries, Strippings and Construction!

Here is a motion picture that gives the facts on modern blasting techniques. It shows how you can save money through better, more complete fragmentation . . . how you can increase safety by eliminating the need for secondary blasting . . . and how your public relations can be improved by holding noise and vibration to a minimum.

"*The Inside Story*" is prepared by Atlas Powder Company as a technical service. Show it to your organization for a better understanding of scientific blasting. It explains in detail how the point of initiation affects blasting results . . . how millisecond delay techniques and alternate velocity loading are used to gain maximum efficiency.

This information also makes "*The Inside Story*" well suited for showing at institute meetings and to other engineering groups.

How to get the film. Simply write us on your letterhead, telling us at what type of meeting you'd like to show "*The Inside Story*," and approximately when you'll need it. We'll try to ship a print to you well in advance of the date you select.

Ask also about other Atlas educational material such as the films, "*How to Handle Women and Explosives*" (for your safety meetings), and "*We're Blasting Near You*" (to show to your neighbors). And write for "*Better Blasting*," the informative Atlas newsletter on latest blasting materials and methods.

EXPLOSIVES DIVISION

ATLAS POWDER COMPANY

WILMINGTON 99, DELAWARE

offices in principal cities

Time May Be of Essence In Performance Dates

"Since it is settled both at law and in equity that the parties may make time of the essence, even where damages may compensate for the delay, it is clear that they may do so by an express declaration that 'time is of the essence.' An examination of the cases will show, however, that those words are not essential. Any words which show that the intention of the parties is that time shall be of the essence of the contract, or any clause which provides in unequivocal terms that, if the fulfillment is not within the specified time, the contract is to be void will have that effect.

"The rule as to when the facts and circumstances, the nature of the subject matter of the contract, or the character of the interest bargained for make time of the essence cannot be stated in a general way. In the determination of the question whether time is of the essence, the general rules of interpretation are applied. Accordingly, the entire agreement is considered, together with the circumstances and purposes of the parties and the subject matter.

"Where the contract is created by telegraph and the surrounding circumstances evidence haste, a time stipulated therein is of the essence.

"A new agreement extending the time of performance is evidence that the parties considered time of the essence." [1]

(1) Friedman v. Winshall, 73 N.W. 2d 248, quoting from 12 American Jurisprudence, page 866.

Demolition Costs Allowed Because of Defective Work

A Court of Appeals in Louisiana has ruled that, when a contractor's work is so defective that it's of no use to an owner, the owner can recover not only the money he paid to the contractor but also the cost of demolishing what the contractor has done.

The case stemmed from a building contract that specified walls of concrete block. During performance of the work, the owner on several occasions complained to the contractor that the concrete blocks were not level and that the walls that were being built were out of line. The contractor ignored these complaints and proceeded to complete the concrete block walls.

When the walls were completed, the owner complained to the contractor that the walls were several inches out of line and that the top of the walls was so out of level that the second story of the building could not be erected on the walls. The contractor refused to remedy the defects and abandoned the job. The walls were so defectively constructed that the owner had to employ another contractor to demolish them and build new walls. The owner then brought an action against the contractor to recover the amount paid him for the work plus the cost of demolishing the walls and obtained a recovery, which judgment was affirmed on appeal.[1]

The appellate court stated: "The damage for the breach of a building contract is usually the cost of remedying the defective work, but this rule is applicable only where the owner derives some benefit from the defective construction. Home Services v. Marvin, La. App., 37 So. 2d 413. In this case the wall erected by the contractor was completely worthless and it was necessary for the owner to rebuild it."

(1) Charles v. Stafford, 83 So. 2d 926, Court of Appeals of Louisiana, Nov. 21, 1955.

Substantial Performance And Contractor Recovery

Where a contractor has substantially performed a construction contract, he is entitled to recover the contract price, less the cost of completing the work. This rule is particularly applicable where the owner prevents the contractor from completing the work.

In a recent Georgia case,[1] where this issue was involved, the court stated: "While performance as a condition precedent to a recovery on the contract must, according to the rule of the common law, be strict performance in accordance with the terms of the contract, good faith and substantial performance is not enough. 17 C.J.S., Contracts, Section 508, page 1085; Haynie v. Murray, 74 Ga. App. 253, 39 S.E. 2d 367. The hardship of the rule requiring strict performance in order to permit recovery on a contract generally, when applied to a contractor who has undesignedly violated his contract, and the inequitable advantage that it gives to an owner who receives and retains the benefit of the builder's labor and materials have led to its qualification; and it is generally held that, where the compensation is due only on performance of the contract, a literal and strict performance is not required, and if the builder, acting in good faith and intending and attempting to perform his contract, does so, he may recover the contract price, notwithstanding slight and trivial defects or deviations in performance, for which compensation may be made, in all its material and substantial particulars, by an allowance to the owner. 17 C.J.S., Contracts, Section 509, page 1087; Boggs v. Shadburn, 65 Ga. App. 683, 16 S.E. 2d 234; Where the owner prevents the performance of a stipulation of a contract undertaken by the contractor, he is estopped from setting up in his own behalf any injury which may have resulted from the nonperformance of such condition. Stimpson Computing Scales Co. v. Taylor, 4 Ga. App. 567, 61 S.E. 1131, 1132; Byck v. Weiler Co., 3 Ga. App. 387, 59 S.E. 1126."

(1) Allied Enterprises v. Brooks, 93 S.E. 2d 392, Court of Appeals of Georgia, May 7, 1956.

Owner Can Sue Contractor For Negligence at Job Site

Although an owner is not ordinarily liable to a third party for damages resulting from the negligence of an independent contractor, both the owner and contractor are liable if the owner can be charged with knowledge of the dangerous situation created by the contractor. In that case, the owner has a right of action against the contractor. The following case is an illustration of this point.

The owner of a building had entered into a contract with an independent contractor to paint a building. The painting of the window trim was performed by use of a scaffold which enabled it to be done from the top floor downward to the ground floor. The scaffold was attached to grappling irons which extended over the coping of the roof. To secure the grappling irons and the scaffold, ropes were strung from the upper ends of the grappling irons to some permanent part of the roof, such as a standpipe or chimney.

During the course of the work, the ropes had been progressively moved around the building and some of the rope that held up the scaffold extended five to six inches above the surface of the roof from the coping to the standpipe. A tenant of the building was walking towards a clothesline to hang up some wash when she tripped over the rope. She brought an action against the landlord to recover damages. The owner counterclaimed against the contractor. The tenant obtained a judgment against the owner, and the owner's counterclaim against the contractor was dismissed. The appellate court affirmed the judgment of the tenant against the landlord but reversed that part of the judgment that dismissed the owner's counterclaim against the contractor, holding that the landlord was entitled to be reimbursed by

WILD
HEERBRUGG

T-3
Precision
Theodolite

A WILD instrument designed for highest accuracy, time-saving conveniences, and a remarkable work potential

The Wild T-3 Precision Theodolite is the supreme instrument in its class . . . for accuracy . . . versatility . . . and for its proved reliability in virtually all conditions of weather and climate.

The T-3 is an ultimate instrument for Geodesy and for precision triangulations. It has a distinguished record in triangulating the longest bridge spans in the world.

NOTABLE FEATURES OF THE WILD T-3
- Performs triangulations of the first and second order.
- Circle reading direct to 0.2 seconds.
- Telescope magnification 24x, 30x, 40x.
- No eccentricity error.
- Ideal for ultra-precise measurements in industry and laboratory.

Write for Booklet T-3 . . . and use the Wild Heerbrugg advisory services without obligation.

WILD HEERBRUGG INSTRUMENTS, Inc.
Main at Comet St. • Port Washington N.Y. • Port Washington 7-4343
SALES • FULL FACTORY SERVICES

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Beliron
STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops: Eddystone, Pa.—Philadelphia, Pa.
Royersford, Pa.

22nd St. & Washington Ave. Philadelphia 46, Pa. Main Office

AISC

New York Office 44 Whitehall St., N. Y. 4, N. Y.

GUNITE
Since 1915
CONCRETE
SAND AND CEMENT
Placed by Air

We have the equipment, personnel and experience to complete any and all GUNITE work regardless of size or location.

Send for specifications and bulletins

GUNITE CONCRETE & CONST. CO.
1301 WOODSWETHER RD., KANSAS CITY 5, MO.
2016 WEST WALNUT, CHICAGO 12, ILLINOIS
3206 HOUSTON, HOUSTON 9, TEXAS
1308 PARKWAY DRIVE, ST. LOUIS 4, MO.
Milwaukee and Twin Cities · Denver · New Orleans

the contractor for any damages he would have to pay the tenant for injuries sustained as a result of the negligence of the contractor.[1]

The appellate court, quoting from another case,[2] stated: "It is true that an owner is not liable for the negligence of an independent general contractor unless the duty of care in performing the work is non-delegable. In other words, where the danger arises merely because of the negligence of the independent contractor or his employees, which negligence is collateral to the work and which is not reasonably to be expected, the owner cannot be held liable to a third party. But where from the nature of the work the duty of care in its performance is non-delegable and the owner is put on notice of the existence of such dangerous condition, he may properly be held liable to a third party injured by the negligent act of a subcontractor or his employees."

The court found that the landlord could be charged with knowledge of the dangerous condition that the contractor created.

(1) Harrington v. 615 West Corp., 151 N.Y.S. 2d 564, Supreme Court, Appellate Division, New York, May 8, 1956.
(2) Schwartz v. Merola Bros. Const. Co., 290 N.Y. 145, 48 N.E. 2d 299.

Agreement on an Upset Cost Bars Architect's Recovery

The law is well established that where an architect is employed to prepare plans for a building, to cost not more than a certain sum, the architect is not entitled to compensation unless the building can be constructed for the stipulated amount.[1]

In the case referred to, an architect brought an action to recover the fair and reasonable value of services rendered in preparing plans and specifications for the construction of several buildings. The contract of employment was oral. There was no discussion as to the fee to be paid the architect.

The party for whom the buildings were to be erected claimed that at the time he employed the architect it was agreed that the cost of erecting the buildings was not to exceed a stipulated amount. After the plans and specifications had been prepared, the owner obtained bids from several contractors to perform the work, but all the bids exceeded the stipulated price and the project was abandoned.

The architect, in his action to recover for the services rendered by him in preparing the plans and specifications, denied that any upset price of the cost of the work had been agreed upon. At the trial, the owner asked the court to instruct the jury that if it found as a fact that the employment contract provided that the cost of erecting the buildings would not exceed a stipulated amount and the buildings could not be erected for such upset price, the architect was not entitled to a recovery. The court refused to grant the request and the jury brought in a verdict in favor of the architect. This judgment was reversed on appeal, the appellate court holding the refusal to grant such request was erroneous and directed a new trial.

(1) Campbell v. Evens & Howard Sewer Pipe Co., 286 S.W. 2d 399, St. Louis Court of Appeals, Jan. 17, 1956.

Courts Look to Contract To Determine Its Meaning

The intent of the parties—as reflected in the contract itself—is usually the key to the meaning of the contract. Courts have expressed the rule in various ways. Some of these follow.

"A contract must be construed as a whole and the intention of the parties is to be collected from the entire instrument, and not from detached portions; it being necessary to consider all of its parts in order to determine the meaning of every particular part as well as of the whole."[1]

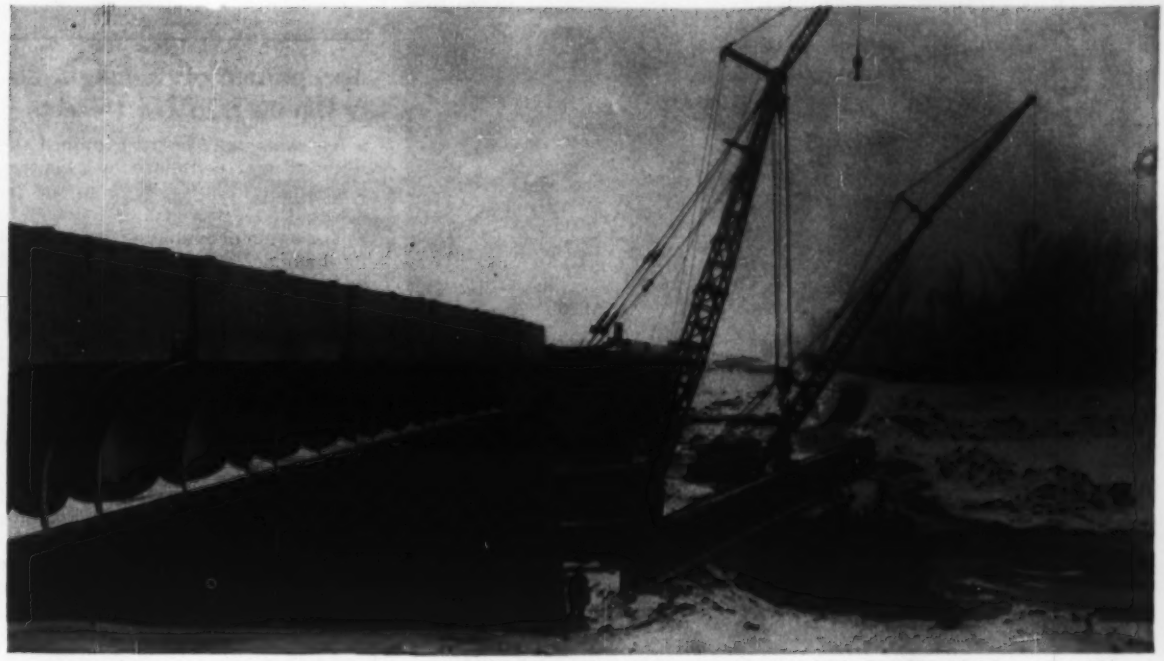
"The rules of construction of contracts require us to adopt an interpretation which gives meaning to every provision of a contract or, in the negative, no provision of a contract should be left without force and effect. 1 Restatement, Contracts, Section 235, subdivision (c), Fleischman v. Furgueson, 223 N. Y. 235, 119 N. E. 400; Rentways, Inc., v. O'Neill Milk & Cream Co., 308 N. Y. 342, 347, 126 N. E. 2d 271, 273. Even if there was an inconsistency between a specific provision and a general provision of a contract, the specific provision controls. 1 Restatement, Contracts, Section 236 subdivision (a)."[2]

"Ordinarily the construction of a contract will be governed by the law of the state in which the contract was made. 11 Am. Jur., Sec. 116, p. 397."[3]

The intention of the parties to a written contract which is expressed by clear and unambiguous language, must be determined from the contents of the contract itself. The law presumes that a person who enters into a contract understands its meaning and effect and intends to be bound by its terms.[4]

(1) Gladding & Co. v. Scientific Anglers, 139 F. Supp. 236.
(2) Muzak Organization v. Hotel Taft Corp., 1 N.Y. 2d 42.
(3) Buzzone v. Hartford Accident & Indemnity Co., 125 A. 2d 551.
(4) Frentzel v. Siebrandt, 73 N.W. 2d 612.
(5) Lassiter v. Town of Oxford, 234 F. 2d 217.

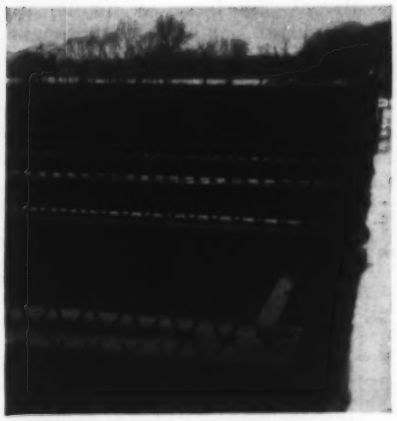
(*Legal continued on page 94*)



One of the largest all welded highway bridges *in the East. New York States' Erie Thruway over Cattaraugus Creek. Carries six traffic lanes, has center mall and safety walks on both sides.*

ALL-WELDED HIGHWAY BRIDGE DESIGNS

...take less steel, built for lower cost



Composite action *of reinforced concrete slab and steel girders is made possible through ⅞" steel spirals welded to top of girder flange.*

SUBSTANTIAL savings in steel and cost are being realized by the use of welded design in the construction of highway bridges by State Departments throughout the country.

This structure which carries the New York State Thruway across Cattaraugus Creek is composed of five 132 foot spans. The 8-inch reinforced concrete roadway slab is attached to the steel girders to provide composite action between structural materials of different characteristics. The slab is tied to the top flanges with 6-inch spirals of ⅞-inch steel welded to the girder flanges to take horizontal shear.

This bridge is one of hundreds of welded structures designed and built by the Department of Public Works of New York State. Savings average 15% to 20% in steel and construction over similar steel riveted structures.

Structural Engineers send for Studies in Structural Arc Welding giving data on welded bridge design. Write

THE LINCOLN ELECTRIC COMPANY

Dept. 2321 Cleveland 17, Ohio

The World's Largest Manufacturer of Arc Welding Equipment

When bridge designs can be simplified

Have better appearance...require less maintenance...

Yet cost less to build...

WHY shouldn't you design more for welding

Above: Gymnasium and shop buildings of Ellensburg High School, Ellensburg, Washington, are thin shell concrete poured over engineered and prefabricated falsework by Timber Structures, Inc. Gymnasium is 175 feet in span, and shop building has span of 85 feet. Falsework has been moved into position for second pour. Right: reinforced concrete ribs anchor into buttresses between buildings. Below: Multi-purpose building is poured in complete units. Architects-Engineers: Maloney & Whitney of Seattle; Wall, Bartram & Sanford, Junction City, Oregon, are general contractors.

Engineered Falsework Lowers Costs

on Concrete Shell High School Buildings

In specifying engineered and prefabricated falsework by Timber Structures, Inc., contractors Wall, Bartram & Sanford lowered their costs and speeded completion. Precision fabricated, the falsework needed only job-site assembly and erection. After the first pouring, forms were decentered and moved intact into position for subsequent pours.

Thorough engineering, with a liberal safety margin, eliminated the possibility of failure with its dangers and unpredictable costs.

A quarter century of experience, with sustained service and responsibility in laminating and fabricating hundreds of falsework applications, makes Timber Structures, Inc. especially well qualified to assist you. Engineering facilities are available to whatever extent desired.

Take the "unpredictables" out of your next project. Call your nearest Timber Structures representative, or write us for information.

TIMBER STRUCTURES, INC.

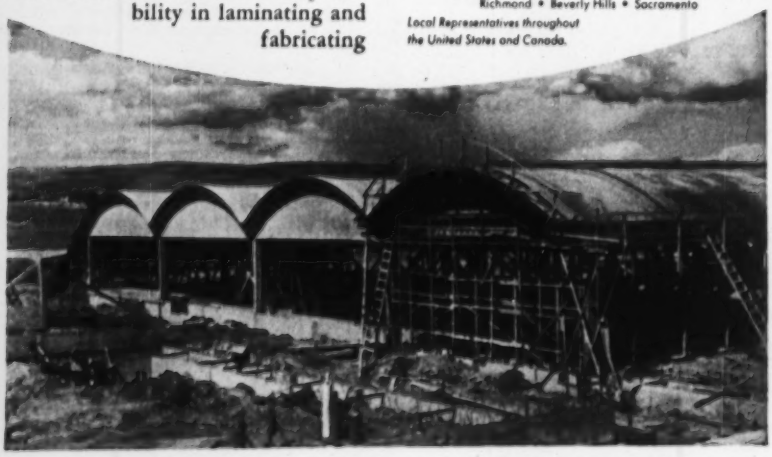
P.O. BOX 3782-C, PORTLAND 8, OREGON

Offices in Ramsey, N. J.; Rochester, N. Y.; Boston, West Hartford; Cleveland, Charlotte, Chicago; Centerline, Mich.; Kansas City, Kirkwood, Mo.; Wichita; Minneapolis; Des Moines; Memphis; Dallas; Houston, Birmingham, Seattle; Spokane; Denver.

TIMBER STRUCTURES, INC. OF CALIFORNIA

Richmond • Beverly Hills • Sacramento

Local Representatives throughout the United States and Canada.



. . . **Legal**

Acceptance of Work Is Bar to Suit for Defects

An owner, once he has examined and accepted work performed by a contractor, usually loses the right to sue for defects later discovered.

The owner of a building in Louisiana, for example, engaged a contractor to do a painting job in the building. After the work was completed, the owner examined the job and expressed his satisfaction with the way the work had been performed. He paid the contractor for the work and engaged him to do another painting job on another building that he owned. Later, defects developed in the work and the owner brought an action against the contractor to recover the costs of remedying the defects in the work, claiming that by examining the work and paying for the same, he did not waive the right to recover for the cost of remedying defects therein because he lacked experience in construction work. The damages claimed amounted to $464, but the court awarded the owner a judgment in the sum of $50.

The appellate court reversed the judgment of the trial court and dismissed the action brought by the owner. The appellate court[1] stated: "It is settled law that a party for whom construction work has been performed under contract, who has accepted the work, has expressed his satisfaction therewith, and has settled therefor without objection or complaint, is estopped from claiming damages for alleged violations of the contract." Many Louisiana cases are cited to sustain this principle of law.

(1) Welsh v. Hume, 86 So. 2d 236.

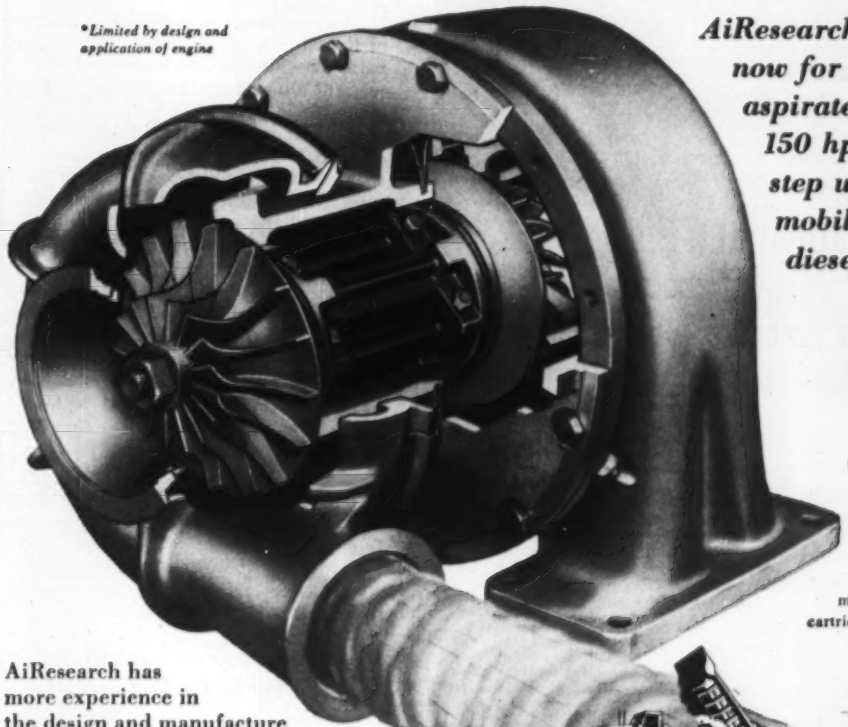
State Court Defines Rule Of Substantial Performance

The doctrine of substantial performance permits a contractor to recover for work performed and, at the same time, allows the owner compensation for the contractor's deviations from the contract. Application of the rule is illustrated in a case arising in Florida under the following circumstances.

A dredging company entered into a contract with the owner of a parcel of land fronting the ocean to place certain fill on the property for an agreed price of $10,000. The contractor brought an action to recover a balance due for the performance of the work. The owner claimed, in defense, that the filling as placed by the contractor was deficient and that the work as performed did not comply with the requirements of the contract. The contractor introduced evidence to the effect that the filling had

AiResearch Turbochargers improve diesel engine performance up to 100%*

*Limited by design and application of engine



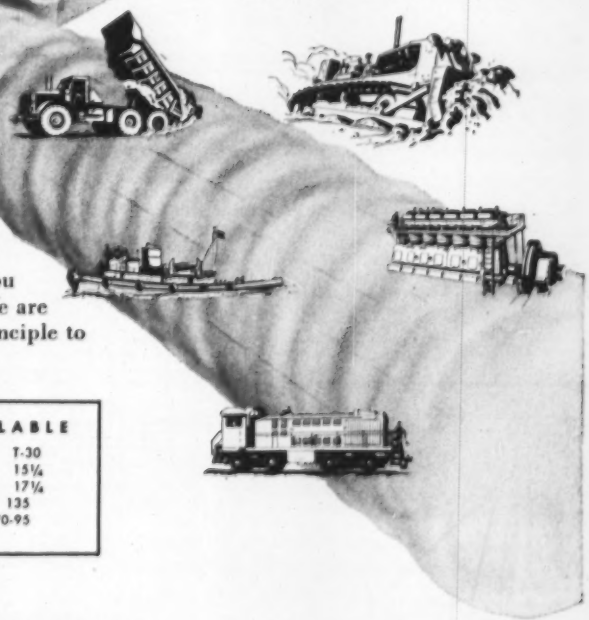
AiResearch units are available now for use with normally aspirated diesel engines of 150 hp and up. They step up performance of both mobile and stationary diesels, land or marine.

Removable cartridge simplifies repair and overhaul

This cartridge contains the turbocharger's rotating assembly, bearings and seals in a factory balanced package. It can be replaced in minutes with another factory balanced cartridge by a mechanic on the scene.

AiResearch has more experience in the design and manufacture of small turbomachinery than any other company. AiResearch turbochargers are the most efficient and safest units of their kind. New additions to the AiResearch family of turbochargers have widened their range of application in the diesel engine industry.

Our engineers welcome the opportunity to work with you in improving the performance of your diesel engines. We are happy to confer on applications of the turbocharger principle to your power plants.



AIRESEARCH TURBOCHARGERS NOW AVAILABLE

MODEL	T-10	T-15	T-16	T-30
Diameter — in. nom.	9	15¼	11½	15¼
Length — in.	9	16¾	15¾	17¼
Weight — lb.	39	125	100	135
Output — lb/min. (Standard Conditions)	25-40	35-65	45-65	70-95

THE GARRETT CORPORATION

AiResearch Industrial Division

9225 South Aviation Blvd., Los Angeles 45, California

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND RELATED MACHINERY

LIMA ROADPACKER . . .
The cost-cutting vibratory compactor— proved on turnpike jobs

This is the hard-hitting, high-capacity machine that penetrates deeper—finishes a 13' width in one to three passes.

On this Ohio Turnpike job near Cleveland, Ohio, the LIMA Roadpacker is compacting a bank run gravel sub-base to an 8" high-density thickness. The LIMA Roadpacker's maneuverability was demonstrated efficiently on this job which required compacting operations in widely scattered sections—the problem of transporting cumbersome equipment and the duplication of units was eliminated.

Course aggregate for macadam bases up to 12" thick can be spread in a single layer, then uniformly compacted to final density over a 13'-1" width with the LIMA Roadpacker.

Single spread, which is permissible only with the vibratory method, reduces material handling by one-half or more—it eliminates backtracking of spreading equipment and contour shaping is needed only once.

The action of the vibration "runs in" screenings to full depth of macadam with only three operations. Much of the labor formerly required to spread, broom and roll is eliminated. The versatile LIMA Roadpacker performs with equal efficiency on both full-width and widening jobs.

Here's how the LIMA Roadpacker speeds up paving operations.

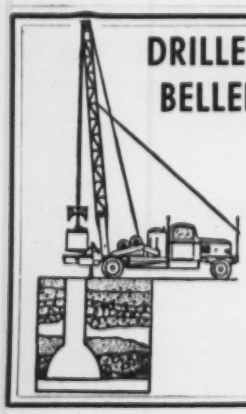
- Drives to job at 30 MPH.
- Compacts equally well traveling forward or reverse—no deadheading or turning around when two passes are required.
- Covers a 13'-1" width, one-half of a two lane road.
- Operator can easily fold end shoes for narrower working widths or for highway travel. Shoes are raised and lowered hydraulically.
- Low maintenance—all working parts are completely enclosed, can even operate under water or dirt. Shoes are driven hydraulically and are pressure-lubricated.

A fact-filled 4-page folder tells how the new LIMA Roadpacker will help you make more paving profits. Write for your copy today.

LIMA SHOVELS · CRANES DRAGLINES · PULLSHOVELS

BALDWIN-LIMA-HAMILTON Construction Equipment Division—LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation Hamilton • Lowry Hydropress • Madson • Pelton • Standard Steel Works



DRILLED PILING and BELLED CAISSONS

consultants on foundation problems

SHORING & BRACING, FORMATION TEST HOLES, ELEVATOR SHAFTS, DE-WATERING AND UNDERPINNING . . .

CAISSON SIZES....16" to 84"
BELL SIZES.....2' to 15'
SHAFT DEPTHS.....to 200'

CASE FOUNDATION CO.

Rt. 1, Roselle, Ill.

Phone (Chicago) . . . . . Austin 7-3584

Write for Specifications

been placed to the elevation indicated by the stakes installed by the engineer employed by the owner and that the deficiency in the grade of the filling resulted from a settlement of the grading stakes installed by the owner's engineer and not through any fault on the part of the contractor.

The trial court held that the defects in the work resulted from faults on the part of both the owner and the contractor and allowed the contractor a judgment for the amount claimed, less the cost of remedying the defects. The judgment was granted on the theory that, under the circumstances of the case, the contractor had substantially performed the contract.

The judgment of the trial court was affirmed on appeal, the appellate court stating: "The rule which we have announced is applicable to building contracts where there has been substantial performance by the contractor, and the owner refuses to pay the contract price because of the failure of strict performance. It appears to us that in this case the so-called 'substantial performance rule' should apply. See 9 C.J., Building and Construction Contracts, Sec. 149, p. 810; and 17 C.J.S., Contracts, Sections 508 and 509, pp. 1085-1087."[1]

(1) Poanski v. Millings, 82 So. 2d 675, Supreme Court of Florida, July 15, 1955.

Contractor Not Liable For Defects In Plans

The law is well settled that a contractor is not responsible for defects in work where the defects stem from faulty plans and specifications. When the contractor has performed the work in accordance with the plans and specifications, he has fulfilled his contract.

A contractor, for example, brought an action to recover a balance allegedly due him under a contract for construction of a tile roof. The owner claimed, in defense, that the roof, as built, was defective. The trial court found as a fact that the contractor had performed the work in accordance with the plans and specifications and that the defects did not result from any fault on the part of the contractor and that, under such circumstances, the contractor was not responsible for the defects and was entitled to recover the balance due him under the contract. The judgment in favor of the contractor was affirmed on appeal.[1]

(1) Michel v. U. S. Fidelity & Guaranty Co., 80 So. 2d 173.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

WHERE CLEANLINESS SAFETY and ECONOMY COUNT...

Hospital corridors must be easy to clean and safe from fire. The answer here is wainscoting of K&M Apac.

K&M "APAC" ASBESTOS SHEETS

These two illustrations show but one of many excellent uses for this material . . . use K&M Apac almost anywhere . . . as interior and exterior siding, office paneling, plant and office ceilings, machine shop sheathing, stock room sidewalls, basement partitions, linings for elevator casings; as inside-plant enclosures, as waste and storage bins, and even as hoppers.

K&M Apac is the ideal low-cost, long-life building material. It is made of two practically indestructible ingredients . . . asbestos fiber and portland cement . . . and actually grows harder and more durable with age. K&M Apac cannot burn, rot or corrode, nor can it be damaged by vermin or rodents. Apac is easily sanitized with soap and water.

PRACTICALLY NO MAINTENANCE NEEDED, indoors or out! K&M Apac sheets are highly weather-resistant. Their natural gray color is attractive and no painting is required for protection.

INEXPENSIVE APPLICATION is possible with K&M Apac . . . large 4′ x 8′ sheets can be applied on a big area quickly, and even unskilled labor can cut, drill or shape them on the job without special equipment.

K&M Apac is ideal for this ramp-wall which must be rugged to withstand the continuous scuffing and scraping of heavy traffic.

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

K&M best in asbestos

New '57 Fords

New T-750 tandem truck, 37,000-lb. GVW. High Torque 212-hp V-8 engine, 4-barrel carburetor and Master-Guide power steering, standard.

Only Ford Gives You All These Deep-Down Modern Features

NEW Styleside pickup bodies, standard at no extra cost. America's biggest pickup bodies! Built wider with all-steel rugged box-section corner reinforcements and recessed taillights. Side loading's far easier with full-width body.

NEW hydraulic clutch, standard in all models from pickups to tandems. Easier to operate—works like hydraulic brakes. Clutch and brake pedals are suspended type for extra driving ease!

NEW riding comfort! A completely new chassis suspension, roomy cabs with increased visibility, greatly improved riding and handling ease.

NEW power advances! New higher horsepower, new freer breathing, new higher compression, new Super-Filter air cleaner. New advancements from camshafts to carburetors. Modern Short Stroke design in every engine—V-8 or Six.

NEW Driverized cabs—completely new—stronger, roomier, smarter! New wider full-wrap windshield. New inboard cab step, new Hi-Dri ventilation, new easy-to-read instrument panel!

NEW chassis strength! New frames, up to 13% stronger. New sturdier axles! New higher capacity, easier riding springs!

More modern in more ways

...to cut your costs!

NEW F-600 2-tonner has higher horsepower and more rugged chassis construction. More payload capacity than any other 2-tonner.

NEW F-100 pickup with Styleside body, standard at no extra cost. Flareside body with wood floor also available. Both types in either 6½- or 8-foot body lengths.

Boldly modern! That's the *big* news in Ford trucks for '57. Modern styling outside—modern engineering through and through. They're the most *efficient* Fords ever built—engineered to cut your costs.

Look at Ford's new Extra Heavy Duty tandem models. They're at home with any load, anywhere! See the money-saving Medium Duty models . . . the most versatile trucks Ford has ever built. And Ford's new pickup with its smart-looking Styleside body gives you the biggest capacity in the half-ton field—*standard at no extra cost!*

Under the hood of a '57 Ford, you'll find important new advances in power. Engine breathing is freer, more efficient. And every engine—V-8 or Six—offers the cost-cutting benefits of Ford's modern Short Stroke design.

New Driverized Cabs are roomier, more comfortable than ever. And new structural design improvements make these the strongest Ford Cabs ever built.

Deep down it's a rugged truck, too! There's new toughness everywhere—in stronger frames, in sturdier axles, in higher-capacity springs.

One look at these completely new, boldly modern Ford trucks for '57 will make you want to see just what they can do. Contact your Ford Dealer now!

FORD TRUCKS COST LESS

. . . LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

How to Flash and Waterproof with PERMANENT COPPER for less than 15¢ PER SQ. FT.

Copper Armored Sisalkraft is reenforced waterproof paper coated one side with pure copper. You get *pure* copper protection at low cost for all concealed flashing: over spandrel beams, on parapet walls, door and window flashing, in shower stalls, boiler and shower rooms.

Copper Armored Sisalkraft can be applied rapidly and easily. It is workable at any temperature and bonds well. It is permanent . . . noncorroding . . . proven.

Available in widths from 4″ to 60″ in 1, 2 and 3 oz. weights. Write our main offices in Attleboro, Massachusetts, for source of supply, samples and descriptive literature.

American SISALKRAFT Corporation

Chicago 6 • New York 17 • San Francisco 5

Other Products in the SISALKRAFT LINE

Orange Label Sisalkraft — Reenforced, waterproof building paper

Sisalkraft Moistop — Permanent vapor barrier

Sisalkraft Vaporstop — Rot resistant vapor barrier

Sisalation — Reflective insulation and vapor barrier

Sisalite — Pure polyethylene film

Sisal-Glaze — New plastic glass replacement

Harry Reinhardt Leaves California Public Utility

Harry Reinhardt, vice president and chief engineer of California Water & Telephone Co., has retired after 28 years of service with the public utility.

He was responsible for construction during 1943-45 of loveland Dam near San Diego and Los Padres Dam on the Monterey Peninsula in 1948-49.

Reinhardt, who served as president of the California section of the American Water Works Association in 1939, has been active in utility engineering since 1912, when he joined the early water works companies of Oakland and Berkeley.

Walker, Skidmore Honored By Architect's Institute

Ralph T. Walker, New York architect, and Louis Skidmore, senior partner of Skidmore, Owings & Merrill, New York architectural firm, will be the recipients of honors awarded by the American Institute of Architects.

Walker will receive the special Centennial Medal struck in commemoration of the 100th anniversary of the AIA. He was chosen as recipient of the medal because of the "unstinting use of his talents and energies in the field of public service."

Walker designed the Prudential Building in Newark, N. J., New York Telephone Co. headquarters in New York City and Brooklyn, the AFL-CIO Building in Washington, D. C., and many other buildings and projects in this country and abroad. He has served on President Eisenhower's Committee on Housing Programs, as director of ACTION and in other public service posts.

Skidmore is to be awarded the Gold Medal for 1957 in recognition of his "leadership in the formation and conduct of a firm which has made outstanding contributions to the profession of architecture."

Skidmore is a Fellow of the AIA, author of a section of Exposition Architecture in the Encyclopedia Britannica and a past president of the New York Building Congress.

Hobbs Retires from Post With Cement Association

Sam Hobbs has retired from the Portland Cement Association after 33 years service as an engineer with the organization. He represented the association on the Pacific Coast Building Officials Conference for many years. He was general chairman of the first regional meeting of the American Concrete Institute in Los Angeles in 1954 and is local chairman for the annual meeting to be held there in 1959.

Hobbs graduated from Dartmouth College in 1912 and the Thayer School of Engineering at Dartmouth in 1913. He worked for the Massachusetts Highway Commission and Rowe Construction Co. in Boston before joining the PCA. He spent four years in the Boston office of the association before transferring to the West Coast.

Hobbs expects to do consulting work in concrete and will continue magazine writing on concrete construction projects.

LSU Selects Fred Fenn To Be Engineering Dean

Louisiana State University has appointed Fred H. Fenn, professor of engineering mechanics and director of University College, to be dean of its college of engineering. His appointment will become effective upon the retirement of Dean Leo J. Lassalle on July 1.

Lassalle will retire with the rank of Dean Emeritus. He first came to the college in 1908 and has been dean since 1931.

Fenn has been a member of the LSU faculty since 1932 and has held full professorial rank since 1947. He has been secretary to the dean, assistant di-

FOR SAFE AND SPEEDY HOISTING

Heavy construction calls for heavy-duty blocks and MADESCO blocks combine the performance features developed through 30 years of specialized engineering for the construction field. Heavy steel shells and fittings, heavy iron or steel graphite-bronze, self lubricating sheaves are grooved to give you the maximum return for your rope investment. Sheaves equipped with bronze or anti-friction bearings for easy operation and long service.

Our special service departments will help you with their recommendations. Write for our catalog or consult your equipment dealer who can supply you with MADESCO products.

MADESCO TACKLE BLOCK CO.
EASTON, PA.

MADESCO BLOCKS

Engineered to Serve Your Special Service Needs

PHOENIX BRIDGE COMPANY

Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS

General Office and Shops
PHOENIXVILLE, PA.

Subsidiary—Barium Steel Corporation

CONSTRUCTION BUILDINGS

$3,448 buys one like this 30' x 100' portable building. For storage, workshops, garages, sheds, offices. Extensible in 10' sections from 30' x 20' to 30' x 250' and up. Post-supported roof. Fine construction. Erected in a matter of hours, easily dismantled. Used by nation's top construction firms. Other sizes, types, including clear span. *Write, wire, phone for prompt delivery, information.*

ECONOMY BUILDINGS INC.
WEST CHICAGO 11 ILLINOIS

save more of it

with

STUD WELDING

. . . the fastest electric arc welding process for end welding fasteners

KSM®

KSM PRODUCTS, INC.
stud welding division
MERCHANTVILLE 58, N. J.

WIDE FLANGE BEAMS

Immediate shipment — 1 piece to a carload

35 Ton	6" @ 15.5#	x 60/65'	100 Ton	14" @ 30#	x 50/65'
40 Ton	6" @ 20#	x 40/65'	100 Ton	14" @ 34#	x 50/65'
100 Ton	8" @ 17#	x 50/65'	100 Ton	14" @ 38#	x 50/65'
100 Ton	8" @ 20#	x 50/65'	100 Ton	14" @ 43#	x 50/65'
50 Ton	8" @ 24#	x 50/65'	20 Ton	14" @ 48#	x 50/65'
100 Ton	8" @ 31#	x 50/65'	20 Ton	14" @ 53#	x 50/65'
100 Ton	8" @ 35#	x 50/65'	100 Ton	14" @ 58#	x 50/65'
50 Ton	10" @ 11.5#	x 50/65'	100 Ton	16" @ 36#	x 55/65'
50 Ton	10" @ 15#	x 50/65'	100 Ton	16" @ 40#	x 55/65'
100 Ton	10" @ 21#	x 50/65'	100 Ton	16" @ 45#	x 55/65'
100 Ton	10" @ 25#	x 50/65'	100 Ton	16" @ 50#	x 55/65'
100 Ton	10" @ 33#	x 50/65'	100 Ton	18" @ 50#	x 55/65'
100 Ton	10" @ 45#	x 50/65'	100 Ton	18" @ 55#	x 55/65'
100 Ton	12" @ 27#	x 50/65'	100 Ton	21" @ 62#	x 55/65'
100 Ton	12" @ 31#	x 50/65'	100 Ton	21" @ 68#	x 55/65'
100 Ton	12" @ 36#	x 50/65'	100 Ton	21" @ 73#	x 55/65'
100 Ton	12" @ 40#	x 50/65'	100 Ton	24" @ 76#	x 55/65'
100 Ton	12" @ 45#	x 50/65'	100 Ton	24" @ 84#	x 55/65'
100 Ton	12" @ 50#	x 50/65'	100 Ton	24" @ 94#	x 55/65'

SHIP CHANNEL

100 Tons	6" @ 15.3#	x 55/60'	50 Tons	13" @ 35#	x 55/60'
50 Tons	7" @ 19.1#	x 55/60'	50 Tons	13" @ 40#	x 55/60'
50 Tons	8" @ 22.7#	x 55/60'	50 Tons	13" @ 50#	x 55/60'
50 Tons	13" @ 31.8#	x 55/60'			

Also large stocks of I-Beams, Channels, Plates, Angles, Bars, etc.

Warehouses in Chicago, Pittsburgh, Philadelphia, Houston, Denver, Los Angeles and Kansas City

Phone . . . Wire . . . Write—All phones WEbster 9-5969

ASSOCIATED STEEL CORP. 600 S. Michigan Ave. Chicago 5, Ill.

rector of the engineering experiment station, acting head of the engineering mechanics department and director of the University College since 1952.

Fenn has received two bachelor's degrees—in civil and electrical engineering—and a master's degree in civil engineering at LSU. In addition, he also holds a Master of Science and Doctor of Science from the University of Michigan.

Engineering Staff Changes Made by Road Department

Pennsylvania Secretary of Highways Joseph J. Lawler has announced four changes in the engineering staff of the department.

Robert H. Klucher of York has been assigned as district engineer, District 8 (Harrisburg), succeeding **Victor B. Leopold,** who has been assigned to Central Office, Bureau of Project Development. **Norman B. Greene** has been transferred from assistant district engineer, District 2 (Clearfield), to Central Office, Maintenance Unit, succeeding **R. E. Eisiminger,** who has been assigned to District 8 as assistant district engineer.

Lumber Association Names Executive Vice President

Richard G. Kimbell has been appointed acting executive vice president of the National Lumber Manufacturers Association. He will replace Leo V. Bodine, who resigned to accept a position with Diamond Match Co.

Kimball has been with the NLMA for 38 years. He was the director of the organization's technical and standards department for 20 years and has been vice president of technical services since 1954.

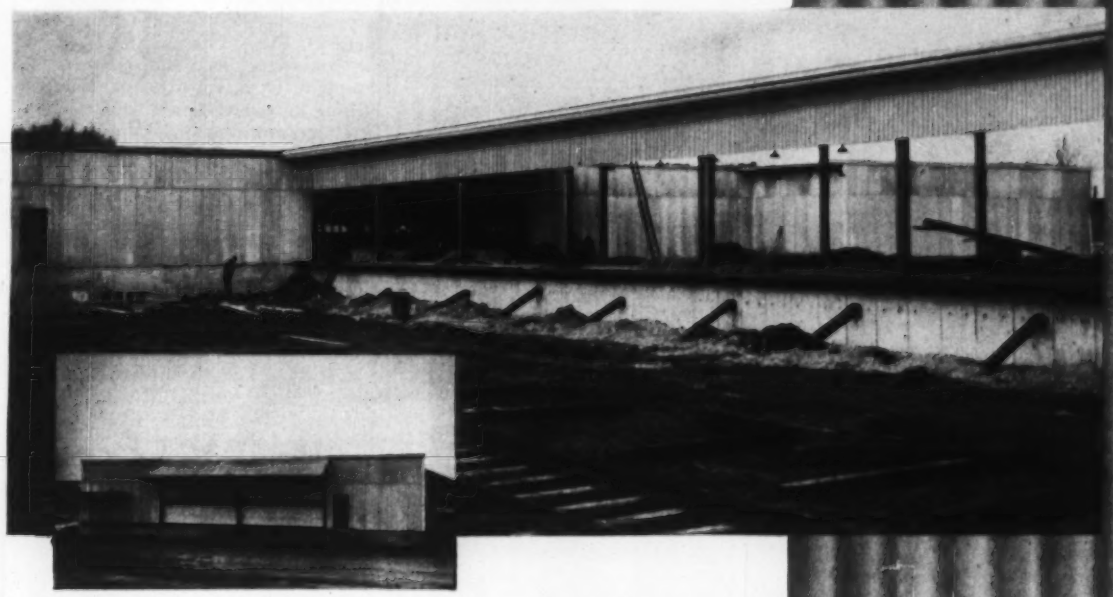
Kimball is the author of a number of publications on wood utilization, timber engineering and structural design. Several of these are used as college texts.

Kaiser Names J. F. Frain As Principal Engineer

J. Fraink Frain has been appointed principal engineer in the Kaiser Engineers Division of Henry J. Kaiser Co. His activities will pertain to Kaiser's clients in the steel industry, where he has had a 35 year career.

Frain, a Lehigh University graduate, has been a consulting engineer in Latin America for the last 10 years. Prior to that he was superintendent of rolling mills at Carnegie-Illinois Steel Co. at Gary, Ind. Earlier in his career he was superintendent for Babcock-Wilcox Tube Co.

THESE LOW COST WALLS STAY ECONOMICAL



Here's why Mr. L. V. Lacy, Vice President of Sordoni Construction Co., chose Gold Bond Corrugated ASBESTONE "400" for this Fast-Freight Terminal

"light weight—speedy erection—low cost—freedom from maintenance"

This Buffalo Fast-Freight Terminal for the Delaware, Lackawanna & Western Railroad Co. was built by Sordoni Construction Co. As Mr. Lacy of Sordoni Construction Co. puts it:

"Gold Bond Corrugated ASBESTONE "400" was a most practical material for the exterior walls of the warehouse, which is not heated, because of its light weight, speedy erection, low cost and freedom from maintenance." These are four of the most important points to consider when you specify building products for exterior walls or roofs.

Mr. Lacy's firm put 27,000 square feet of corrosion-resistant Corrugated ASBESTONE "400" on these sidewalls. The money that Gold Bond ASBESTONE "400" saved on the initial application was only the start. ASBESTONE "400" will save maintenance dollars every year—and it actually grows stronger with age.

Does this Fast-Freight "400" story suggest a Gold Bond® Corrugated Asbestone use to you? Wherever you use it, you're getting strength and good looks for a lengthy lifetime. For further details, write Dept. EN-37, National Gypsum Company, P. O. Box 5257-B, New Orleans, La.

CORRUGATED ASBESTONE "400"

NATIONAL GYPSUM COMPANY

Gold Bond
BUILDING PRODUCTS

the NEW miller MULTI ARC
combination ac-dc welder

The Miller Multi-Arc combination ac-dc welder, built specifically for metallic arc welding, delivers either ac or dc current at the flick of a switch. Electrical control circuit eliminates mechanical controls. Primary switch is standard equipment; Power Factor Correction optional. Six models from 10 to 525 amperes—all with 60% duty cycle ratings.

Complete specifications sent on request.

". . . if it's Miller you know it's the finest . . ."

miller Electric Manufacturing Company, Inc.

APPLETON, WISCONSIN

distributed in Canada by CANADIAN LIQUID AIR CO., LTD., Montreal

HARDWARE
Hot Dip Galvanized or Black
For HEAVY Construction

Made to your specifications of Steel or Genuine Wrought Iron.

SHIPPED TODAY IF NECESSARY

Bolts, Screw Anchors, Tie Rods
Upset Rods, Straps, Washers, Staples
Dock Spikes, Manhole Hardware, etc.

JERSEY BOLT & SPIKE CORPORATION

from
●
●
OFFICE MANAGER
●
to
●
GENERAL MANAGER
●
●

yes, that is the quality of the personnel available to your organization through the Classified Advertising pages of ENGINEERING NEWS-RECORD.

Classified Advertising Division
ENGINEERING NEWS-RECORD
330 W. 42nd St. New York 36, N. Y.

Obituaries

Andrew R. Ketterson, former engineer of bridges for the Canadian Pacific Railway, died Feb. 11 in Montreal. He had been with the railroad since 1907 and had been engineer of bridges from 1937 until his retirement in 1946.

Nelse P. Mortensen, 72, Seattle building contractor, died Feb. 10. He was president of a construction company bearing his name, which he founded 47 years ago, and a past president of the Seattle chapter of the Associated General Contractors of America.

James B. Gregg, 47, senior staff member of the Columbus Planning Commission, died Feb. 14. He had played a major role in redrafting the Columbus Zoning Code, in setting up a performance standards system and in activating a master plan for city development. A graduate of Harvard University, he had been supervisor of the Mississippi State Planning Commission, the Mississippi Board of Development Planning and the Mississippi Public Works Reserves. He also had served as senior planning technician for the Alabama State Commission, as associate planner in Dayton, as planning director in Portsmouth, Ohio.

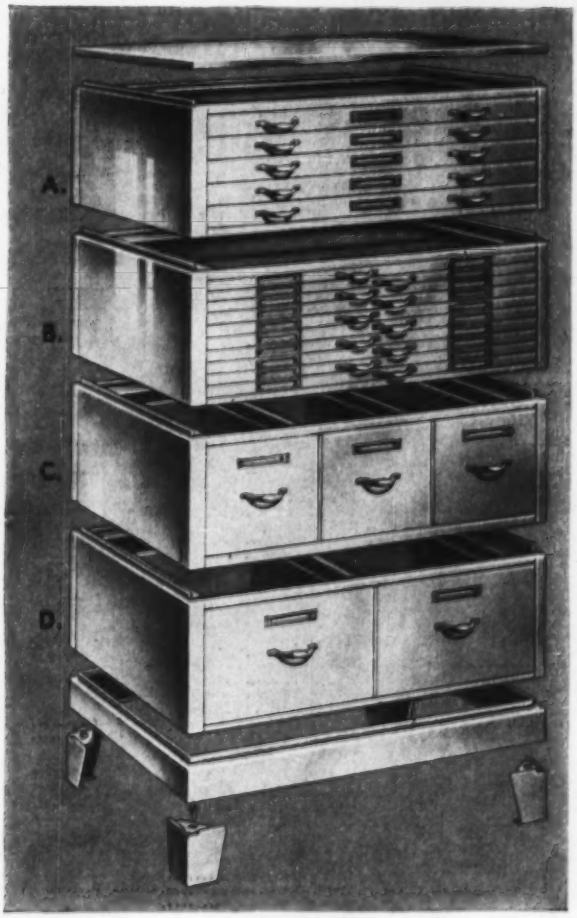
Raphael Hume, 68, New York architect, died Feb. 16 in Mexico. Hume, who designed numerous homes, schools, churches and public buildings, drew up plans in 1948 for reconstruction of the University of Nizmegen in the Netherlands. Among his works are the Church of the Holy Trinity, Hackensack, N. J.; Church of St. John and St. Mary, Chappaqua, N. Y.; St. Mary's High School, Manhasset, N. Y.; the Scarsdale, N. Y., public library, and St. Joseph's Hospital, in Stamford, Conn.

Roy E. Keim, 54, senior group engineer with Boeing Airplane Co., died in Seattle Jan. 31, 1957. He previously had worked for J. Gordon Turnbull, Inc., of Cleveland, the Bureau of Reclamation and the Tennessee Valley Authority. He was a graduate of the Missouri School of Mines.

Raymond P. Wilson, 70, civil engineer for 50 years in New Brunswick, N. J., died there Feb. 10. He headed the firm of Raymond P. Wilson & Associates, which he had founded in 1917. A graduate of Rutgers University in 1907, he had been municipal engineer for several New Jersey communities and had worked on the construction or enlargement of several Army installations in New Jersey.

FACE IT!

Right Now Is the Time to Eliminate Haphazard Filing, Save Time and Space with a Hamilton UnitSystem!



The boom in production means more pressure for drafting room output . . . more pressure on you for filing time and space. Right now is the time to replace those old, inadequate files you've been putting up with—now's the time to get a modern Hamilton Unit-System from Bruning.

With UnitSystem, you file drawings and records in units especially designed for them by size and frequency of use. Drawings are easier to file and find, which saves time. UnitSystem's interlocking feature lets you combine exactly the units you need—in higher stacks—which saves space. It lets you expand your filing set-up gradually, efficiently, and economically.

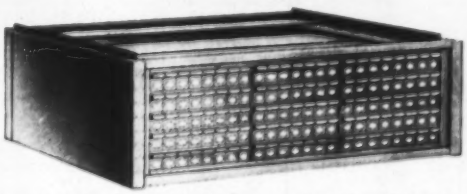
One unit (A) has five deep drawers to provide ideal storage for semi-active or inactive drawings and records. Shallow-Drawer Unit (B) with special tracing lifters makes any active tracing easily accessible without risk of damage to companion tracings. Vertical Filing Units (C-D) with index binders and compressors keep active small sheets upright without wrinkling.

Act now to gear your filing to the growing demands of the production boom. Mail coupon today.

America's Leading Supplier of Engineering and Drafting Equipment

BRUNING

Offices in 37 Cities of the U.S. and Canada



File units for roll tracings are available. Individual trays protect each roll from dirt, tearing, and crushing.

CHARLES BRUNING COMPANY, INC. · CHICAGO

In Canada: Charles Bruning Co. (Canada) Ltd., 105 Church St., Toronto 1, Ont.

Charles Bruning Company, Inc., Dept. 34-M
4700 Montrose Avenue, Chicago 41, Illinois

☐ Please send me information on Hamilton UnitSystem.
☐ Send me information on the Bruning-Hamilton free analysis and planning service.

Name_____ **Title**_____

Company_____

Address_____

City_____ **County**_____ **State**_____

construction
STEEL
EVERY KIND IN STOCK
IMMEDIATE SHIPMENT
REINFORCING BARS and accessories
STRUCTURALS—channels, angles, beams, etc.
PLATES—many types including Inland 4-Way Safety Plate
SHEETS—many types & coatings
TUBING—incl. welded structural
WIRE MESH—all standard sizes
EXPANDED METAL—std. & flattened
STEEL SPIRALS, CAISSON RINGS, ETC.
RYERSON
Joseph T. Ryerson & Son, Inc. Plants at: New York • Boston • Wallingford, Conn. Philadelphia • Charlotte, N. C. • Cincinnati Cleveland • Detroit • Pittsburgh • Buffalo Chicago • Milwaukee • St. Louis • Los Angeles • San Francisco • Spokane • Seattle

Kinnear Rolling Doors
Kinnear Steel Rolling Doors are Registered. Full details on every door are held in fire-proof vaults. Kinnear Doors never become "orphans". Worn or damaged parts are replaced even after 50 years of door service.

KINNEAR
Saving Ways in Doorways
Write for catalog!
The KINNEAR Manufacturing Co.
1820-40 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.

Unit Prices

Most Bids Up For Arizona Highways

Quantities and Low Bids on All State Highway Projects

Item	Unit	1956 Quantity	1956 Low Bid	1955 Quantity	1955 Low Bid
Clear & grubb	ac	37	$620.00	52	$238.33
Exc, roadway	cy	3,117,345	0.72	4,914,920	0.70
Overbreakage	cy	45,800	0.83	29,150	0.74
Slides	cy	17,300	0.57	14,600	0.49
Exc, drainage	cy	214,615	0.63	308,365	0.65
Ditches, grader	lf	216,505	0.108	296,900	0.078
crown	lf	33,700	0.212	75,400	0.179
Dikes, crown	lf	5,200	0.312	3,150	0.16
Exc, structural	cy	90,144	2.68	90,416	2.52
Overhaul	cymi	133,110	0.28	131,180	0.25
Borrow	cy	2,173,910	0.48	2,398,470	0.48
Rd surf, reshape	mi	51.74	186.00	73.5	416.67
Stripping pits	cy	181,100	0.17	82,000	0.19
Water, apply	Mgal	388,375	1.99	421,540	1.96
Rolling	hr	73,980	8.41	84,150	8.15
Select matl	t	2,994,275	0.73	2,348,527	0.69
Subgr seal (cr)	t	2,650	1.05	39,635	0.75
Agg base	t	1,183,590	1.18	925,742	1.24
Blotter matl, std	t	6,960	3.26	26,388	4.03
special	t	6,000	4.95	10,720	4.89
Cover matl, ty B	t	98,375	5.56	87,306	5.62
Bit, mix, rd mix	t	143,425	1.80	87,315	2.12
plant mix	t	442,970	3.00	249,045	3.77
stabilzd base	t	82,105	3.50		
Seal ct, pl mix	t	36,150	5.99		
Asphalt, liqu					
RC-2 or 3	t	1,582	54.00	2,399	48.17
RC-4 or 5	t	114	46.00	275	57.17
MC-2 or 3	t	15,238	49.90	5,891	45.64
MC-1	t	3,029	46.42		
MC-5	t	80	52.00	100	41.50
SC-4	t	256	46.00		
SC-6	t	11,046	39.61	11,838	39.40
Asphalt, paving					
85-100 penetr	t	114	44.00		
120-150 penetr	t	1,246	38.67		
150-200 penetr	t	12,418	39.00	2,311	36.58
Asph, emulsified,					
grade A	t	536	71.53		
grade B	t	10,426	49.09	10,509	44.85
Pvmt, conc	sy	29,837	6.25	228	4.50
Steel, struct	lb	6,087,491	0.235	3,804,125	0.194
Handrail, galv					
steel	lf	1,510	4.78	122	11.00
aluminum	lf	9,891	12.41	7,974	12.10
Conc, cl A	cy	60,510	54.65	46,092	58.60
cl D	cy	2,962	52.26	4,553	54.02
pneum pl	sy	13,430	3.25	5,292	4.75
Stl, reinf, bars	lb	5,078,740	0.137	6,051,405	0.126
CMP, 8"	lf	8,394	2.77	1,598	2.98
12"	lf	498	2.80	504	2.50
18"	lf	2,754	4.69	2,135	4.53
24"	lf	17,400	6.39	25,321	5.93
30"	lf	6,064	7.66	10,489	7.05
36"	lf	11,550	10.94	10,528	11.14
42"	lf	1,920	13.45	3,832	11.87
42", 8-ga	lf	188	20.00		
10-ga	lf	206	17.00		
12-ga	lf	86	13.00		
48"	lf	1,138	16.84	3,094	14.43
60"	lf	662	26.80	1,892	25.33
66"	lf	292	25.00		
8", perf	lf	224	2.20	585	2.96
CMP arch, 22x13"	lf	2,520	4.76	568	5.53
25x16"	lf	224	5.00		
29x18"	lf	1,396	6.32	1,120	6.50
36x22"	lf	3,252	9.94	424	11.17
43x27"	lf	2,078	13.19	348	12.50
50x31"	lf	388	12.73		
58x36"	lf	684	18.85		
65x40"	lf	886	22.50	52	24.50
72x44"	lf	64	25.50	52	28.00
CMP, bit ct, 18"	lf	184	5.25	382	5.33
21"	lf	72	6.00		
24"	lf	70	8.10	198	7.00
48"	lf	178	20.60		
CMP arch, bit ct					
29x18"	lf	68	5.50	258	6.25
36x22"	lf	46	9.00	380	11.80
43x27"	lf	90	12.00	386	12.62
CB, CM, ty A	ea	24	41.00		
Bkfl, over CMP,					
perf	cy	580	4.00		
Plate pipe, sect					
90"x171'	ls	job	10,000		
138"x190'	ls	job	21,500		
CP, 8"	lf	116	2.00	548	1.50
12"	lf	948	2.20	381	1.50
15"	lf	88	6.50	48	1.65
18"	lf	1,348	2.71	2,540	1.96
18"	lf	1,306	4.86	3,786	2.82
24"	lf	1,771	4.28	5,178	4.24
30"	lf	22	7.50	18	8.00
RCP, 18"	lf	140	11.00	4	6.50
18"	lf	1,416	8.11	1,495	4.99
20"	lf	6	6.50	12	4.50
24"	lf	4,357	8.35	6,681	6.29
30"	lf	544	10.05		
36"	lf	770	11.91	368	10.65
48"	lf	438	13.68	120	13.00
Pipe, culv, reset	lf	2,612	6.76	250	1.50
Dowels, place	ea	1,634	2.26	2,109	2.24
Piles, stl shell or prec, f & dr	lf	1,040	10.50		
stl H column 10"x24#	lf	12,805	8.25	13,994	6.05
12"x53#	lf	29,620	7.76	12,880	7.13
Wall, stl sheet piling, f & dr	lf	465	80.00	248	55.27
Cutoff H-col & sheet piles	lb	39,200	0.10	35,350	0.10
Piles, splice	ea	125	29.92	165	19.39
Remov conc pvmt	sy	9,077	0.88	4,970	0.45
struct	cy	463	24.58	534	25.14
Riprap, plain, E	cy	1,409	10.38	1,558	6.68
grout, F	cy	224	25.00	54	13.50
Cattle gds,					
1 unit	ea	17	466.67	7	516.67
2 unit	ea	11	525.91	8	595.00
3 unit	ea	3	1,000	7	958.33
4 unit	ea	6	1,225	6	1,226
5 unit	ea	2	1,750	3	1,125
6 unit	ea	3	1,750	1	1,625
reconstruct	ea	1	500.00		
Road gd	lf	84,395	3.99	47,565	3.75
special	lf	8,490	0.78	3,350	3.10
bri railing	lf	1,947	4.86		
reconstruct	lf	550	1.67	3,839	2.80
Gde posts, B	ea	2,391	6.37	2,811	6.51
reset	ea	193	3.25	59	4.00
ROW markers	ea	1,176	8.28	1,061	8.24
Line fence	lf	748,827	0.24	1,357,900	0.21
Cyclone safegd, CIP	lf	602	0.44		
Gates, stl fence,					
ty 1, 16'	ea	18	41.66	204	48.82
14'	ea	171	51.46	12	50.00
ty 2	ea	1	25.00	17	23.50
walk, CIP, 3'	ea	7	37.00		
Fence, reconstr	lf	53,995	0.204	13,500	0.18
Wov wire fence, reconst	lf	7,890	0.283		
Survey monuments & covers	ea	135	46.86	103	44.09
reset to grade	ea	7	20.00	1	20.00
CB, conc, #3	ea	60	262.77	43	266.59
speci	ea	6	266.00	9	235.00
Drop inlets, conc, (CIP)	ea	21	210.00		
Single curb, sp	lf	39,825	1.64	38,943	1.38
Curb & gutter					
comb, ty A	lf	105,125	2.35	19,678	2.69
conc, ty A	lf	9,030	2.52		
Curb, single, C-20, ty G	lf	71,815	1.81		
Valley gutt, 4'	lf	3,454	3.11	1,238	4.44
Sidew, conc, 8"	sf	3,990	0.52		
Sidew, conc	sf	104,374	0.42	23,381	0.42
MH frame & cov	ea	3	283.33	23	182.00
reset	ea	48	45.00	12	27.50
Bank prot, ty A	lf	7,040	15.32	6,695	12.88
rail	lf	865	20.00	1,205	18.00
ty B	lf	3,220	10.64	1,500	11.93
Timb ford walls	lf	800	6.38		
RR cross, ty X-1	ea	6	121.67	13	200.00
W-32, adv warn	ea	6	108.33	15	84.00
Curbs, mix bit, pl	ea	129,865	0.145	58,640	0.19
Gutt, mix bit, pl	lf	5,219	1.30		
Irrig standpipe, ty 1	ea	11	186.67	1	250.00
ty 2	ea	17	189.00	8	176.67
RR cross, S.P. drawing #CS-576	lf	368	25.33		
Ditch lining, conc	sf	3,410	0.49		

Comparison of Basic Items—1955-1956 (low bids)

Item	Average 1956	Low Bid 1955	
Structural excavation	$2.68	$2.52	+ 6%
Select material	0.73	0.69	+ 5%
Aggregate base	1.18	1.24	− 5%
Blotter material	3.26	4.03	−19%
Cover material "B"	5.56	5.62	− 1%
Asphalt, liquid, MC-2 or 3	49.90	45.64	+ 8%
SC-6	39.61	39.40	+ 1%
paving, 150-200 penetr	38.96	36.58	+ 6%
emulsified	49.09	44.85	+ 9%
Handrail, aluminum	12.41	12.10	+ 2%
Concrete, cl A	54.65	58.60	− 7%
cl D	56.26	54.02	+ 4%
Steel, reinforcing, bars	0.137	0.126	+ 8%
CMP, 8"	2.71	2.98	− 9%
12"	2.80	2.50	+11%
24"	6.39	5.93	+ 7%
30"	7.66	7.05	+ 8%
54"	21.00	17.93	+15%
60"	26.80	25.33	+ 5%
CP, 12"	2.20	1.50	+32%
18"	4.86	2.82	+42%
24"	4.28	4.24	+ 1%
RCP, 24"	8.35	6.29	+25%
36"	11.91	10.65	+11%
Road guard	3.99	3.75	+ 6%
Guide posts, type B	6.37	6.51	− 2%

Dowflake in 25-lb. bags assures accuracy, eliminates awkward measuring buckets

Better concrete faster . . . and easier! That's exactly what you get with Dowflake® in handy 25-lb. bags.

This package of Dow calcium chloride serves as an accurate measure . . . makes work lighter and faster at the plant or on the job site. Just add the contents of one bag for every 5-yard batch of 5-sack mix concrete to obtain 1% Dowflake. For 2% concentration, add the contents of two bags. Simple!

No messy buckets to handle. No spillage losses. And most important, this easy way assures concrete the faster set, improved workability, density and strength that only calcium chloride can provide. Take advantage of it, especially on long hauls through heavy traffic when it's usually necessary to add the Dowflake at the project site.

Order Dowflake in 25-lb. bags and get better concrete faster . . . and easier! THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. IN 704W.

YOU CAN DEPEND ON DOW

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, Feb 14; Next, Mar 14
- Wood Products, Glass, Explosives, chemicals: Last, Feb 21; Next, Mar 21
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Feb 28; Next, Mar 28
- Wage Rates, Building Board, Lath, Insulation: Last, Feb 28; Next, Mar 28

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.' truckload del.' per block		CONCRETE Ready Mixed 1:2:4 del. 50 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¼ in.	Sand	1½ in.	¼ in.	1½ in.	¼ in.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.31a	$3.90a	$3.57	$2.18	$2.28	$2.50†	$2.18	$2.33	$1.55	$1.65	$0.175	$....	$13.75g
Baltimore	4.27c	3.86c	3.64c	2.80‡a	2.80‡a	2.25‡a	2.95‡a	2.90‡a	2.05‡a	2.00‡a	.18	.18a	12.75
Birmingham	4.08	3.15af	....	2.53n	2.53n	2.13n	2.75	2.75	1.55	1.65	.18	.18	12.55
Boston	4.99bf	4.52a	4.79e	3.00a	3.00a	3.00a	1.65a	1.80a	....	....	.23	.275a	14.00A
Chicago	4.13a	3.72a	3.87	3.78‡b	3.78‡b	4.13‡b	3.95‡b	3.95‡b	2.25‡	2.25‡	.25	.25b	14.00p
Cincinnati	4.22c	3.81c	3.90	2.29‡c	2.34‡c	2.34‡*	2.64‡c	2.64‡c	....	....	.205	.25a	12.90p
Cleveland	N.A. in C.L.	3.74	....	2.15ef	1.95f	1.65	4.30‡a	4.30‡a	3.30‡a	3.30‡*	....	.23	16.15
Dallas	3.55a	3.15a	3.43	2.61	2.64	1.98	2.43	2.63	....	....	....	.27	11.25
Denver	4.60a	4.19a	4.69	1.90	2.05	1.20	....	....	....	....	.22	.245a	10.70
Detroit	4.10a	3.60a*	3.73	4.50‡b	4.50‡b	4.25‡b	3.75‡	3.75‡	3.50‡	3.50‡	.23	.24a	14.20
Kansas City	4.45b	4.25b	4.25	....	....	1.70‡a	2.00‡a	2.00‡a	....	....	.21a	.24c	13.50b
Los Angeles	5.12ch	4.68ch	5.60	2.41‡a	2.76‡a	2.41‡a	2.46‡a	....	....	....	.145/m	.355m	12.00Ah
Minneapolis	4.68a	4.27a	4.27	2.70‡ag	2.70‡ag	1.60‡ag	3.28‡ag	3.28‡ag	....	....	.19	....	14.30f
Montreal	5.11d	2.86d	3.50	1.95‡a	2.20‡a	2.25‡a	1.95‡i	2.20‡i	....	....	.20	.20a	10.80ek
New Orleans	3.75a	3.45a	3.70	2.44	2.44	2.00	....	....	1.45	1.65	.275	....	13.65
New York	4.64a	4.23a	3.88	3.05hk	3.05hk	2.30hk	2.90hl	2.90hl	....	....	.25	.30b	16.10an
Philadelphia	4.34/4.69‡a	3.94/4.31‡a	3.70/4.33‡	2.85‡op	2.85‡op	2.35‡op	2.70‡	2.80‡	2.00	2.35	.24/.30	....	15.80de
Pittsburgh	4.15a	3.76a	3.75	2.40‡	2.40‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.25d	.31	14.00
St. Louis	4.01/4.33c	3.61/3.93c	3.86/4.18	3.25am	3.10am	2.40/3.10am	1.60j	1.70j	....	....	.34	.30c	12.75/13.25
San Francisco	3.94c	3.54c	....	2.02	2.02	2.12	2.17	2.17	....	....	.34	.38el	12.75c
Seattle	4.30a	3.75a	....	4.00‡bm	4.00‡bm	4.00‡bm	4.50‡bm	4.50‡bm	....	....	.36	.37	13.30g
Toronto	4.03	4.03	4.03	2.40‡	2.40‡	2.05‡	2.20	2.20	2.20	2.20	.35	.39c	15.25

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: *a Less 10¢ disc, 15 days. *b Less 2% disc, 15 days. *c Less 10¢ disc, 10 days. *d Truckload lots, deliv. 10¢ disc, 20 days. *e Truckload lots *f Fob mill, add $13.11 to $19.18 per car switching charges *g fob mill + freight *h LCL.

SAND GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons or more. *e ½". *f Pea gravel. *g Less 5% for cash. *h Less than 5 tons. *i Plus 5% mun. & prov. tax *j F.o.b. quarry. *k Barge lots asd. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *o 1-3 mi zone. *p Add 10¢ for ea. add'l mi zone.

CONCRETE BLOCK: *a Cinder *b Waylite. *c Haydite. *d Celocrete *e 5⅛ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i Less 2% for cash *j F.o.b. plant San Rafael. *m F.o.b. yard.

READY MIXED CONCRETE: *a 5 cu. yds. or over del. Man. *b 25 cu. yds or more *c 10-100 cy. brackets. *d 1-3 mi. zone. *e 2,000 lb comp. *f 2,500 lb. comp. *g Less 25¢ disc, 15 days. *h Less 50¢ for cash. *i 8% off for cash. *j 2% off for cash. *k Federal tax included. Add 5% mun. & prov. *l 1:2¼:3½. *m F.o.b. yard *n Plus escalator clause. *o Add 15¢ for ea. add'l 3-mi zone. *p Includes 50c heating charge.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.30†	Buffington, Ind	$3.25†	Steelton, Minn	$3.45†	Muskegon, Mich	$3.30†	Toledo, O	$3.30†
Clinchfield, Ga	3.30†	Independence, Kan	3.10†	Leeds, Ala	3.15†	Saginaw, Mich	3.30†	Milwaukee, Wis	3.35†
Kingsport, Tenn	3.30†	Hannibal, Mo	3.35†	Duluth, Minn	3.45†	Wyandotte, Mich	3.30†	Green Bay, Wis	3.35†
West Des Moines, Iowa	3.35†	Northampton, Pa	3.20†	Hudson, N. Y	3.20†	Buffalo, N. Y	3.40†	Ironton, O	3.30†
Nazareth, Pa	3.20†	Universal, Pa	3.45†	Alpena, Mich	3.20†	Oswego, N. Y	3.45†	Montreal City	2.56†
Bath, Pa	3.20†	Waco, Tex. (+ 10¢ tax)	3.35†	Detroit, Mich	3.30†	Cleveland, O	3.35†	W. Winfield, Pa	3.45†
Leeloy, Pa	3.20†	Giant, S. C	3.35†	Howes Cave, N. Y	3.20†	Alsen, N. Y	3.20†	Security, Md	3.20†

† Prices to hold for first quarter of 1957.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 80,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta				$30.50	$45.00	$0.15	$0.26	$0.125Fw	$0.28Fw	$0.14	$0.125	$0.30
Baltimore	150.00‡			24.00s		.095s	0.185s	.10wE	.19wE	.10i	.105s	0.195s
Birmingham		62.00s										
Boston				24.00asp	46.00asp	24.00as	46.00as	.11aFw	.24*Fw	.11a	.174aG	.25aG
Chicago	150.00‡	90.00‡b	3.95/4.00‡j	24.05b	34.05b	21.40bs	31.40bs	.11bwH	.19bwH	.065b		
Cincinnati												
Cleveland		82.00d	6.30g	25.00A		25.00A		.1115AwF			.1115AG	.21AG
Dallas	s	40.00	s	26.35	45.39	.1116	.1944	29.80	51.40	.1080	.1116	.1924
Denver		50.00										
Detroit		112.00		29.65		29.65s		.1361wI		.1026		.25
Kansas City	s	s	s	21.00el		21.00s		.0975*wJ		.087e	0.125	
Los Angeles	s		s	18.50dms		18.50dvs		20.00dzK		19.00ks	.09j	.19j
Minneapolis			3.73k	29.50		29.50		0.125w		0.115	.134	
Montreal	s	s	s	27.00n	39.60n	.135n	.198n	16.90wuE	20.90wuE	.132n	.197ns	.239ns
New Orleans			s	17.60rs	s	17.60rs	s	.085wo	s	.085B	.09BL	
New York			3.70f	26.80qCD	47.32qD	26.80wCD	47.32wD	.1273wCDF	.2139wDF		.1273CD	.2168D
Philadelphia	175/185	110/120	4.06	22.00		22.00		.095wF		.095		
Pittsburgh	165.00	48.00	4.60	27.00	38.00	.10	.21	27.00E	40.00E	.098	.11	.224
St. Louis				20.63o		.1764		.0925fwM		0.16	.105	
San Francisco		70.00s		23.00g	40.00g	23.00gbs	40.00gbs	24.00gN	41.50gN	23.75e*	.10g	.19g
Seattle				27.00s	40.50h	27.00ns		28.50K		24.75hs	.10h	.11hr
Toronto			4.50	40.10	59.38	0.2045	0.2445	0.214w	0.258w	0.198	0.20	.271

‡ Delivered.

PAVING BRICK & BLOCK: *a CL. *b 3 x 4 x 8. *c 2¼ x 8½ x 4. *d LCL, truck deliveries. *e Not used. *f 2" interior 6# treat. *g 3" *h 2" tr, 8# *i 3 x 3½ x 8½. *j 2½", 8 lb. tr.

ASPHALTS: *a Price at plant, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segunda. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 80-110 penetr. *l Less than 100 penetr. *m 40/80 penetr. *n Fed. tax included; add 5% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 80/70 penetr. *q 40/85 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 85/200 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks. *y F.o.b. Oakland *z F.o.b. Edmonds *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *C Bulk. *D Prices based on transporting to Manhattan via truck. *E RC. *F Also RC. *G Also MS, SS. *H RC 0-5 incl. *I MC 4. *J MC, RC .0675. *K MC 3, 4 & 5. *L MS. *M MC 1-5, RC 1-5, .089. *N MC 3. *O fob Roxanna, Ill *P F.o.b. refinery Savannah: $0.09/gal., tank cars; $0.20/gal., drums.

"EASIER LOADING *than any others we tried*"

That's what operator Clarence Grasse says about the Allis-Chalmers TS-260 he operates on a cut-and-fill road job near Waubeka, Wisconsin.

It's the curved bowl bottom and offset cutting edge design that make the TS-260 easier to load. Dirt "boils" through the center of the load, keeps the load live, fills the bowl with 14-yard heaped loads time after time.

On road jobs like this one, the TS-260's short turning radius—a complete turn in only 30 ft—eliminates need for extra travel-to-turn areas, shortens cycle time, gets job done faster, easier.

Maneuverability and full-capacity loading are only two of many advanced-design features that make the TS-260 motor scraper outstanding in performance and dependability. See your Allis-Chalmers dealer for the full story now. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

AMDEK

PRESTRESSED PRETENSIONED CONCRETE

BRIDGE SUPERSTRUCTURES

Progress in Concrete

AMDEK reduces bridge building costs through greater ease and speed of handling—eliminates painting and other maintenance. Prestressing, pretensioning and vacuum processing—plus the use of special voids—results in a stronger, lighter combination deck and load-carrying member. This composite beam is rapidly placed in any weather. Write today for illustrated literature.

A-M

AMERICAN-MARIETTA COMPANY

CONCRETE PRODUCTS DIVISION

GENERAL OFFICES:

AMERICAN-MARIETTA BUILDING

101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, F. S. DEMBEK, Reports.
I. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

Massachusetts—BA 3/14—Commonwealth of Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, Proj. 249, flood control proj., Sect. III, Linden Brook, covered concrete conduit 1,400 ft. along line Linden Brook and Stream Diversion, Malden, $420,000. Plans deposit $10, refundable.

† **Mass., Bedford** — INCINERATOR — BA On Or About 3/21—U. S. Eng., 150 Causeway St., Boston, Zone 14, incinerator and airfield facilities at Laurence G. Hanscom Field, ENG-19-016-57-175. $200,000-$300,000. Plans deposit $15. CD 8/23.

† **Me., Bangor**—STORAGE FACILITIES—BA On Or About 3/22—U. S. Eng., 150 Causeway St., Boston 14, Mass., storage facilities for ordinance storage area, Dow Air Force Base, ENG-19-016-57-176. $750,000-$1,000,000. Plans deposit $50. CD 8/23.

† **Me., Bangor** — STORAGE FACILITIES — BA 3/25 — U. S. Eng., 150 Causeway St., Boston, Mass., storage facilities for ordnance storage area, Dow Air Force Base, ENG-19-016-57-176. $750,000-$1,000,000. Plans deposit $50, refundable. CD 2/25.

▲ **Mass., Boston**—OFF-STREET PARKING—BA 4/15—City, Real Property Dpt., City Hall Annex, leasing or constr. off-street parking facility, 11 story, rein.-con., Fort Hill Square, Oliver and High Sts. $1,450,000. Plans deposit $100, refundable. John M. Gray Co., 169 High St., archt. CD 4/6.

BUILDINGS—BA

Conn., Wilson—SHOPPING CENTER—BA 3/11—General Wholesale Grocery Co., 59 Leggett St., East Hartford, 28,000 sq. ft. shopping center for Mott Stores. $350,000. Rossetti & DiCorcia, 185 Main St., Bristol, archt. Raymond I. Miller Assocs., 153 Homestead Ave., Hartford, engr.

Mass., Charlton—SCHOOL—BA 3/11—Town, School Bldg. Comn., elementary school, Burlinghame Rd., $450,000. O. E. Nault & Sons, 48 Hamilton St., Worcester, archts. CD 4/26.

Mass., Lexington—LIBRARY—BA 3/12—Town, Bd. Selectmen, Town Office Bldg., 1625 Masachusetts Ave., Cary Library addn. $392,000. Extended date. Kilham, Hopkins, Greeley & Brodie, 9 Arlington St., Boston, archts. Nichols, Norton & Zaldastini, 285 Columbus Ave., Boston, struct. engrs. CD 2/6.

▲ **Conn., Guilford**—SCHOOL—BA 3/26—School Bldg. Comm., Town Hall, high school. $1,177,000. Plans deposit $100. J. Gerald Phelan, 211 State St., Bridgeport, archt. Fletcher-Thompson, Inc., 211 State St., Bridgeport, consult. engr. Englehardt, Englehardt & Leggett, 221 W. 57 St., New York, N. Y., educational consultants. CD 2/14.

Conn., Killingly—SCHOOL—BA 3/26—Town, Town Mgr., Killingly Memorial School, Danielson, Dayville Elementary School. $960,000. Malmfeldt Assocs., 36 Pearl St., Hartford, archts. Chandler & Palmer, 16 Franklin St., Norwich, engrs. CD 1/11.

HEAVY CONSTRUCTION—SLC

R. I., Riverside—SWIMMING POOL—St. Mary's Academy, Riverside, soon lets contract 35x100 ft. swimming pool. $75,000. Joseph M. Mosher & Son, Inc., 77 Washington St., Providence, archts.

BUILDINGS—SLC

Conn., Norwalk—WAREHOUSE—Armstrong Norwalk Rubber Corp., 20 Glover Ave., soon lets contract 6 story, 60,000 sq. ft. concrete warehouse addn. $600,000. Fletcher-Thompson, Inc., 211 State St., Bridgeport, engr. CD 1/31.

Conn., Waterbury—MANUFACTURING, etc.—Somma Tool Co., 15 Brown St., soon lets contract manufacturing and office bldg. $100,000. Fletcher-Thompson, Inc., 211 State St., Bridgeport, engr.

Mass., Springfield — MAINTENANCE and REPAIR — Westinghouse Electric Corp., 90 Tapley St., soon lets contract maintenance and repair bldg., Tapley St. $100,000. Alderman & MacNeish, 594 Riverdale St., West Springfield, archts. CD 2/13.

▲ **Mass., Worcester**—SERVICE—Norton Co., 1 New Bond St. soon lets contract brick central services bldg., New Bond and "C" Sts. $2,000,000. CD 10/3.

HEAVY CONSTRUCTION—LB & CA

† **Davison Constr. Co.**, Manchester, N. H., LB **$421,300**, target and intelligence bldgs., ENG-19-016-57-130, PORTSMOUTH, N. H. U. S. Eng., 150 Causeway St., Boston, Mass. Bids Feb. 21. CD 2/14.

MASSACHUSETTS — Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Dorrance Excavation Contractors, 1285 Park St., Attleboro, Mass. LB **$124,774.** Prop. 1, **$124,774**; Prop. 2, est. $132,592. hy. work, Berkley St., Taunton. Bids Feb. 19. CD 2/6.

▲† **Carlo Bianchi & Co.**, 24 Union Ave., Framingham, Mass. LB **$3,817,155.** Schedules 1 and 2; **$3,967,155.** Schedules 1 and 2 and additive. North Adams flood Control Proj., Unit No. 5, North Adams, CIVENG-30-075-57-11, MASSACHUSETTS. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Feb. 20. CD 1/23.

† **Arden Engineering Co., Inc.**, 60 Taylor Dr., East Providence, R. I. CA **$878,966**, est. $1,044,250. addn. to heating plant and distr. heating system, Westover Air Force Base, ENG-19-016-57-104, CHICOPEE FALLS, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. CD 2/4, under LB.

▲† **Jefferson Constr. Co.**, 75 First St., Cambridge, Mass. CA **$1,294,252** Schedule 2A, airmens dormitories, Westover Air Force Base, ENG-19-016-57-81, CHICOPEE FALLS, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. CD 11/28, under LB.

† **Campanella & Cardi Constr. Co., Inc.**, 780 Jefferson Blvd., Warwick, R. I. CA **$536,797**, est. $598,951. roads and utilities, Otis Air Force Base, ENG-19-016-57-134, FALMOUTH, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. CD 2/13, under LB.

City, Pub. Wks. Dpt., City Hall, Gloucester, Mass. rejected bids Jan. 3, water pumping station, Magnolia St., GLOUCESTER, MASS. LB **$68,320.** CD 1/9, under LB.

† **New England Dredge & Dock Co.**, 60 S. Water St., New Haven, Conn., LB **$92,625**, est. $66,820, Item 2; **$93,100**, est. $87,400, Item No. 1 (1 bidder) imprvt. dredging Sakonnet Harbor, CIVENG-19-016-57-56, RHODE ISLAND. U. S. Eng., 150 Causeway St., Boston, Mass. Bids Feb. 21. CD 2/6.

Seminole Constr. Co., 12 Devens St., East Hartford, Conn., LB **$89,873**, 7,780 ft. sanitary sewers, Turkey Hill South, BLOOMFIELD, CONN. Metropolitan Dist., 115 Broad St., Hartford, Conn. CD 4/25.

BUILDINGS—LB & CA

George H. Reed & Co., Inc., 24 Franklin St., Greenfield, Mass., CA **$500,000.** Tyler HALL addn., BRATTLEBORO, VT. Brattleboro Retreat, 75 Linden St., Brattleboro, Vt. Alfred T. Granger Assoc., Granger Circle, Hanover, N. H., archts.

▲† **C. M. Bacon & Sons**, Forest Hill Rd., Dunstable, Mass. LB **$1,733,447.** Item B, **$1,781,147.** Item A, engineering, modernizations enlisted men's BARRACKS BACHELOR OFFICERS' QUARTERS and MESS HALLS, Fort Devens, No. A1-190-35-57-55, AYER, MASS. Purchase & Contg. Officer, Bldg. P-24, Ayer, Mass. Bids Feb. 19. CD 1/29.

▲ **Owner, c/o Sun Realty Co.**, Rosselerin Rd., Dorchester, Mass. Owner Builds. Approx. **$1,000,000.** "Centerville Estates" 110 HOUSES, CENTERVILLE, MASS. Edward Kellog, Tower Hill Rd., Osterville, Mass., engr.

M. Solimando, 584 Columbia Rd., Dorchester, Mass. LB **$609,400**, est. $750,000. M-729 Contr. No. 3, WARD BLDG. renovations, Cushing Hospital, FRAMINGHAM, MASS. State, Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Feb. 20. CD 2/4.

▲ **John Capobianco**, 101 Tremont St., Boston, Mass. CA **$2,929,000**, est. $2,658,500. JUNIOR-SENIOR HIGH SCHOOL, Oak St., SHREWSBURY, MASS. Town, Junior-Senior High School Bldg. Comn., Shrewsbury, Mass. CD 2/1, under LB.

C. L. Rugo & Sons, Inc., 80 Boylston St., Boston, Mass. LB **$446,442**, est. $450,000. PHA Mass. 31-2 HOUSING, Highland Ave., SOMERVILLE, MASS. Somerville Housing Auth., 30 Memorial Rd., Somerville, Mass. Bids Feb. 21. CD 1/28.

Alcoa Service Corp., Alcoa Bldg., Pittsburgh, Pa. CA **$350,000.** OFFICE, 16,000 sq. ft. office space, WALTHAM, MASS. Aluminum Co. of America, Statler Office Bldg., Boston, Mass. Schell, Deeter & Stott, Gateway Bldg., Pittsburgh, Pa., archts.

C. A. Batson Co., 26 Arlington St., Brockton, Mass. LB **$463,998**, est. $450,000. Shaw SCHOOL replacement, 580 Main St., WEYMOUTH, MASS. Town, Elmer S. Mapes, supt. Schools, East Weymouth, Mass. Bids Feb. 15. CD 1/22.

Ames Constr. Co., 15 Standish St., Hartford, Conn., LB **$500,000**, 1 story, 200x120 ft. block and brick, WAREHOUSE for wholesale plumbing supply business, HARTFORD, CONN., Thomas Trant & Bros., Inc., 228 State St., Hartford, Conn., Russell F. Hills, 130 Washington St., Hartford, Conn., archt. CD 2/15.

Associated Constr. Co., 1010 Wethersfield Ave., Hartford, Conn., CA **$100,000**, 1 story, 100x100 ft. with 30 ft. wing PRINTING PLANT, 165 West Service Rd., HARTFORD, CONN. Fox Press, Inc., 206 State St., Hartford, Conn. Rossetti & DiCorcia, 185 Main St., Hartford, Conn., archts. CD 9/17.

George A. Fuller Co., 597 Madison Ave., New York, N. Y., CA **$500,000**, renovate five floors of Tower OFFICE BLDG. to provide new offices, dining room, incl. new lighting and air-conditioning, HARTFORD, CONN. Travelers Insurance Co., 700 Main St., Hartford, Conn. Voorhees, Walker, Smith & Smith, 101 Park Ave., New York, N. Y., archts. Awarded Feb. 20.

Industrial Constr. Co., 120 Prospect Ave., Hartford, Conn., CA **$160,000**, 1 story WAREHOUSE and OFFICE addn., 114 Grove St., HARTFORD, CONN. Hartman Tobacco Co., 231 State St., Hartford, Conn. Awarded 2/21.

▲ **State P. Wks. Dpt.**, 165 Capitol Ave., Hartford, Conn., rejected bids Feb. 6, Proj. B-131-133, INTENSIVE TREATMENT BLDG., Connecticut State Hospital, MIDDLETOWN, CONN., LB **$5,229,000.** CD 2/8, under LB.

▲ **Fusco-Amatruda Co.**, 59 Amity Rd., New Haven, Conn., CA **$2,930,090** James B. Hillhouse HIGH SCHOOL, NEW HAVEN, CONN. Bd. Educ., 200 Orange St., New Haven, Conn. Bids Jan. 24. CD 1/30, under LB.

▲ **Fusco-Amatruda Co.**, 59 Amity Rd., New Haven, Conn., CA **$3,085,090.** Wilbur L. Cross High SCHOOL, NEW HAVEN, CONN. Bd. Educ., 200 Orange St., New Haven, Conn. Bids Feb. 15. CD 2/20, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **N. Y., Brooklyn**—TAXIWAY LIGHTING—BA 3/14—Dist. P. Wks. Office, Third Naval Dist., Federal Office Bldg., 90 Church St., New York, Zone 7, rehabilitate taxiway lighting U. S. Naval Air Station, Floyd Bennett Field, NBy 8104, Spec. 8104/56.

N. Y., New York—PASSENGER ELEVATOR—BA 3/15—Dpt. P. Wks., Municipal Bldg., Zone 7, furnishing, installing passenger elevator in central sub-station bldg., 126 W. 53 St., Manhattan, Contr. E-163.

N. J., Port Newark—TRAILER PARKING AREA—BA 3/19—At office of the Chief Engineer of the Port of New York Auth., 111 Eighth Ave., New York 11, N. Y., Contr. PN-410-001, constr. trailer parking area. Plans deposit $30. CD 1/18/54.

N. Y., Brooklyn—PIER IMPRVS.—BA 3/19—At office of the Chief Engineer of the Port of New York Auth., 111 Eighth Ave., New York, Zone 11, Contr. BP-150.004 demolition of Piers 3, 4, 5 and a portion of 6 and dredging at site thereof Brooklyn-Port Authority Piers. Plans deposit $30.

▲† **N. Y., Rome**—HYDRANT REFUELING—BA On Or About 3/19—U. S. Eng., 111 E. 16 St., New York, Zone 3, hydrant refueling at Griffiss Air Force Base, $1,000,000-$3,000,000. Greenberg & Ames, 303 Fourth Ave., New York, Zone 10, archts. CD 12/31, under LB.

(Continued on page 114)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**
PROPOSED WORK	
Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

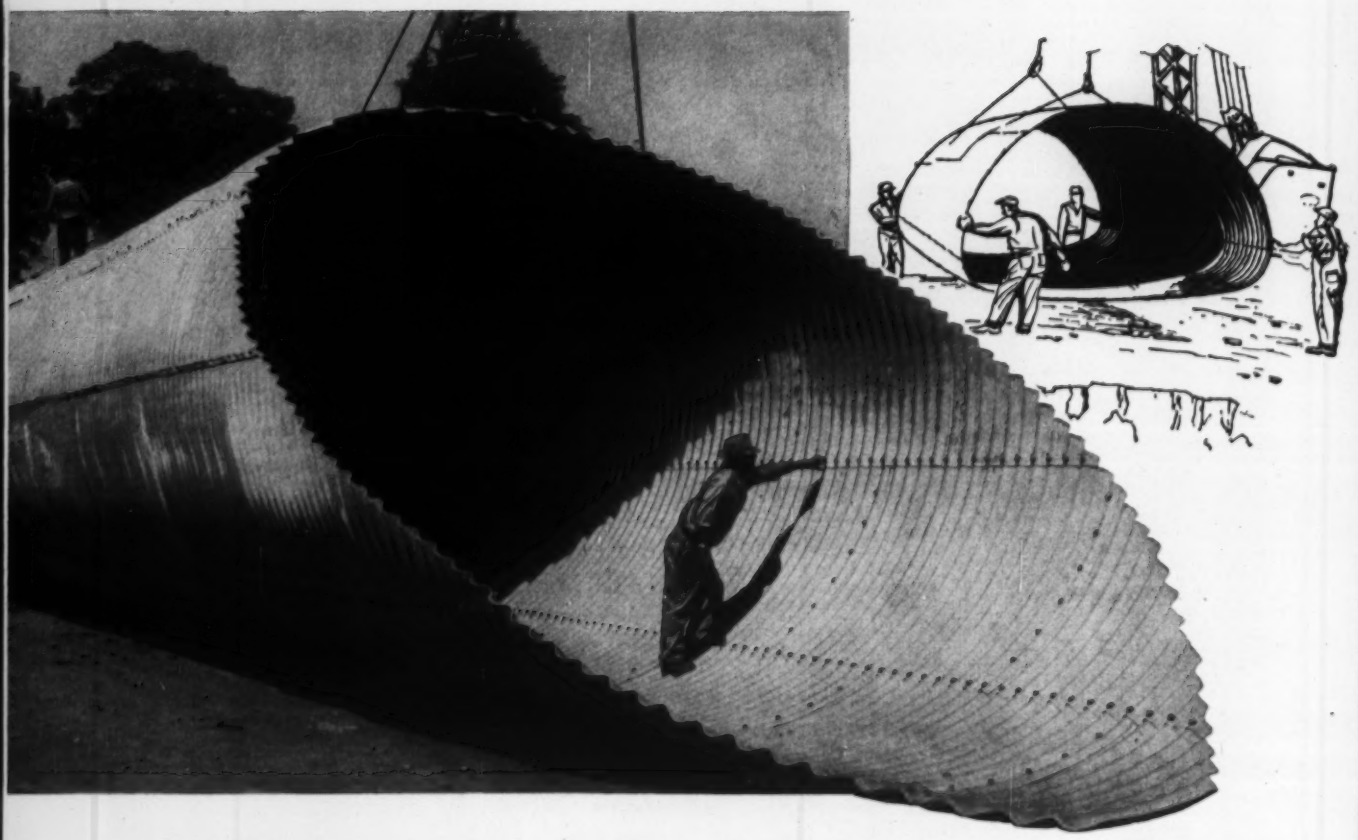
Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

For Permanence, Economy, and

TWO USS PRODUCTS FOR LARGE OR



USS AMBRIDGE SECTIONAL PLATE

PIPE · PIPE-ARCH · ARCH

USS AMBRIDGE Sectional Plate Pipe, Pipe-Arches and Arches are available in a *complete range* of standard sizes to satisfy design requirements for any waterway opening. These flexible structures, with their 6″ x 2″ corrugations, can resist extremely large externally applied loads.

Special details such as asphalt coating, hook bolts, beveled ends, and skewed ends are furnished as specified for each job. These structures are economical, permanent, and go in quickly with minimum traffic interruption.

SEND FOR NEW CATALOG

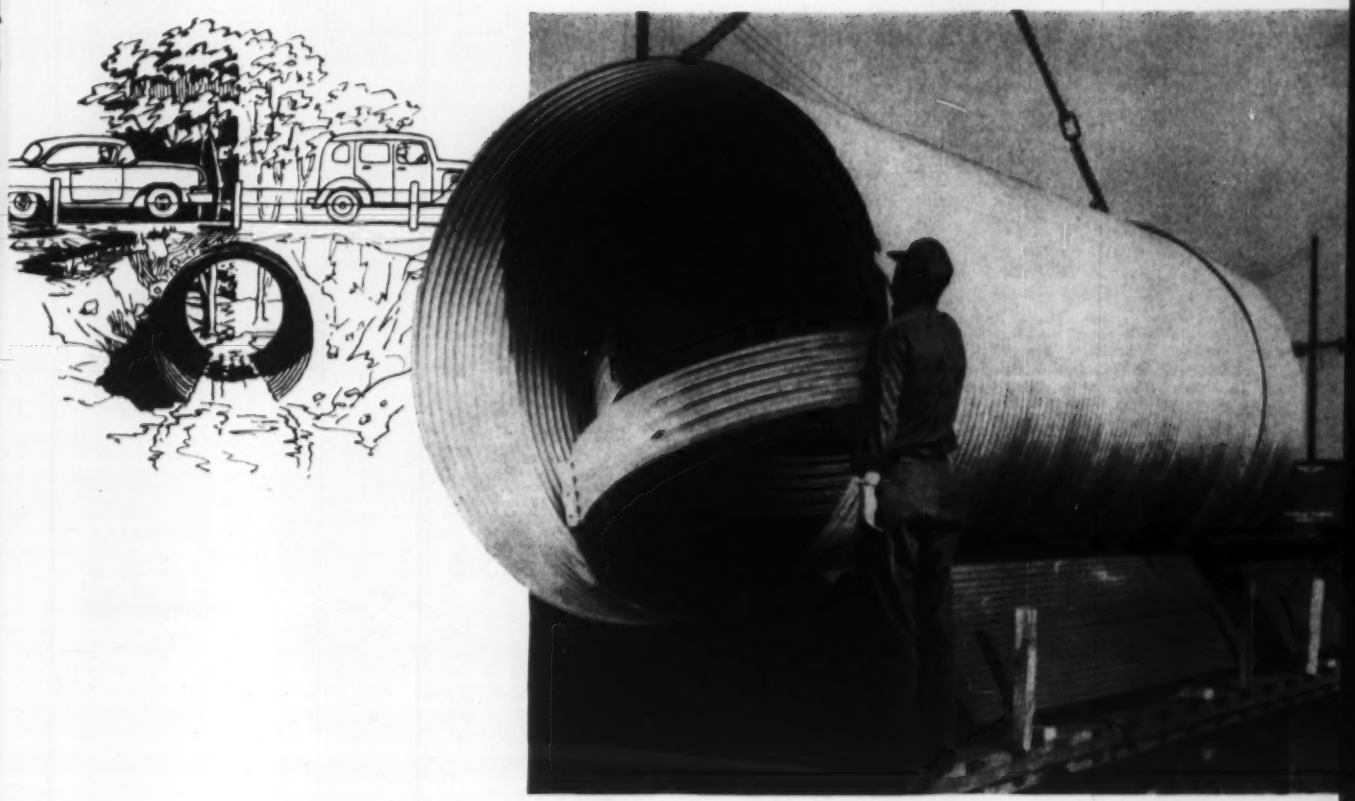
Containing complete information on AMBRIDGE Sectional Plate, our new 28-page catalog covers such details as design, sizes, weights, gages, and assembly instructions. For your free copy, just send your request to American Bridge Division, U. S. Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

USS

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: 525 WILLIAM PENN PLACE PITTSBURGH PA.

Speed of Installation

DRAINAGE STRUCTURES
SMALL



USS GALVANIZED CULVERT SHEETS

Culverts made from USS Galvanized Corrugated Culvert Sheets provide a lasting economical means of handling drainage problems. They will carry more load than rigid-type structures, and readily absorb the forces of impact and vibration.

These advantages, plus the fact that metal culverts are not subject to breakage, require no maintenance, cost less to install and are easy to ship and handle, make them ideal for most drainage purposes.

NEW CATALOG AVAILABLE SOON. We are completing a new catalog on USS Culvert Sheets for Metal Drainage Products. Covers design, sizes and weights, gages, installation and other engineering details. For free copy, send your request to United States Steel Corporation, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

UNITED STATES STEEL CORPORATION, PITTSBURGH, PA. • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

7-455

(Continued from page 111)

▲† **N. Y., Niagara Falls**—RUNWAY PAVING—BA 3/20—U. S. Eng., 111 E. 16 St., New York, Zone 3, runway paving at Niagara Falls Air Force Base, ENG-30-075-57-36, $1,000,000-$3,000,000. Thomas H. McKaig, 881 Main St., Buffalo, engr. CD 2/19.

† **N. Y., Niagara Falls**—INFIRMARY—BA 3/27— U. S. Eng., 111 E. 16 St., New York, Zone 3, infirmary, Niagara Air Force Base, $100,000-$500,000. Crenshaw, Beardsley & King, 402 Herald Square, Syracuse, archts. CD 10/20/55.

BUILDINGS—BA

Pa., Phila.—MAINTENANCE—BA 3/11—City, Dpt. Procurement, City Hall Annex, Bid 4955, general constr., plumbing work, heating work, electrical work, addn. of a maintenance bldg. to the Youth Study Center Bldgs., 20 and 21 Sts. and Parkway. CD 11/5/54, under Unclassified.

N. Y., Jamaica—STORES DIVISION—BA 3/13—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, general constr., plumbing work, heating, ventilating refrigeration and sprinkler work, electrical work and lighting fixtures for constr. of the stores division bldg., at Queens Hospital Center, Goethals Ave. and Parsons Blvd. Plans deposit $50.

▲ **N. J., Laurelton**—SCHOOL—BA 3/20—Brick Twp. Bd. Educ., constr. Junior Senior High School, site imprvs., sewage disposal system, $1,600,000, Micklewright & Mountford, Stuyvesant Ave. and Prospect St., Trenton, archts. CD 4/7/53.

† **N. Y., Ithaca**—TRAINING CENTER—BA 4/23—U. S. Eng., 111 E. 16 St., New York, Zone 3, army training center, $100,000-$500,000. Tallman & Tallman, 903 Henshaw Rd., archts. CD 4/18.

BUILDINGS—SLC

D. C., Wash.—HEADQUARTERS—Associated General Contractors of America, Munsey Bldg., soon lets contract national headquarters, 20 and E. Sts. N. W. $800,000. Chatelain, Gauger & Nolan, 1632 I St. N. W., archts. CD 1/11.

Pa., Phila.—HALL—Religious Lady of Charity of The Good Shepherd, Verree Rd. and Susquehanna Rd., soon lets contract. St. Joseph Hall addn. $344,000, Stickle & Assocs., 134 Narberth Ave. Narberth, archts.-engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **Andrew Catapano & Co.**, 88-43 76 Ave., Glendale, N. Y. and **Grow Constr. Co.**, 313 W. 53 St., New York 19, N. Y. (joint venture), LB **$10,346,260** Base Bid, same Alt. A, **$6,829,830**, Alt. B. (3 bidders) Contr. No. 1, Morgan Interceping Sewer, Metropolitan Ave., Scott Ave., Randolph St., Varick Ave., Johnson Ave., Knickerbocker Ave., Morgan Ave., Lombardy St., Monitor St., Monsignor McGoldrick Park and Russell St. for Newtown Creek Pollution Control Proj. Brooklyn, and Queens Boros, NEW YORK. Dept. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Feb. 21. CD 2/4.

Tufano Contg. Corp., 32-17 Lawrence St., Flushing, N. Y. LB **$269,609.** (6 bidders) constr. taxiway and holding pads and furnishing installing utilities at LaGuardia Airport, Contr. LGA 290.001, JACKSON HEIGHTS, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Feb. 19. CD 1/23.

▲† **Sovereign Constr. Co. Ltd.**, 1181 Broadway, New York 1, N. Y. LB **$2,209,850.** (10 bidders) airmen's dormitories and dining hall (FY 1957), Griffiss Air Force Base, ENG-30-075-57-290, ROME, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Feb. 20. CD 1/30.

▲† **Beacon Contg. Co.**, 102 Hano St., Boston, Mass. LB **$1,641,208.** (8 bidders) S.A.C. bldg. area (FY 1957 program) Griffiss Air Force Base, ENG-30-075-57-310, ROME, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Feb. 19. CD 1/29.

† **U. S. Eng.**, 111 E. 16 St., New York 3, N. Y. cancelled bids to have been opened about Feb. 20, ammunition storage facilities, Suffolk Air Force Base, WESTHAMPTON BEACH, N. Y. CD 1/24.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,

N. J.—Gaskill Constr. Co., Riverside, N. J. LB **$630,249** (6 bidders) drainage work, paving Rte. 42 (north South Freeway), from U.S. Rte. 130 to point 1,700 ft. south of Browning Rd., Gloucester City, Camden Co.;

N. J.—F. A. Canuso & Sons, 173 W. Roosevelt Blvd., Phila., Pa. LB **$451,470** (4 bidders) wid'n., dualization 1.648 mi. U.S. Rte. 130 from Rte. 42 at Fairview to Broadway Circle in Brooklawn, Camden Co.;

N. J.—Central Constr. Co., Clark, N. J. LB **$79,097** (3 bidders) drainage imprvs. on Rte. 35 at Sylvania Ave. and intersection imprvs. on Rte. 35 at Sunset Ave. in Neptune City and Ocean Twp., Monmouth Co. Bids Feb. 19. CD 2/1.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

Pa.—Buckley & Co., Inc., 1317-21 S. Juniper St., Phila., Pa. LB **$4,356,660.** (6 bidders) constr. 3-span plate girder bridge over Schuylkill River and railroad tracks, retaining walls, piling, Pennsylvania Blvd., Philadelphia, Philadelphia Co.

Pa.—B. B. Constr. Co., Philipsburg, Pa. LB **$97,535** (4 bidders) constr. plate girder bridge with adjoining hy. of crushed aggregate base and bit. surf. 18 ft. wide, 1,101 ft., Pine Creek Twp., LR. 33022 (R-1), Jefferson Co. Bids Feb. 21. CD 1/23.

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

Pa.—Charles Riebe, 333 Columbia Ave., Palmerton, Pa. LB **$141,332.** (5 bidders) constr. 10,685 ft. crushed aggregate base with bit. surf. 18 ft. wide, Union Twp., L.R. 06097, Berks Co.

Pa.—Saba Constr. Co., Hulmesville, Pa. LB **$266,323.** (9 bidders) constr. 8,526 ft. crushed aggregate base with bit. surf. 2 prestressed precast rein.-con. bridges, Middletown Twp., Appl. 48 (2), Bucks Co.

Pa.—Edward A. Dayler Co., Inc., P. O. Box 551, Coatesville, Pa. LB **$129,210.** (9 bidders) constr. 2,200 ft. crushed aggregate base with bit. surf. 16 ft. wide 1 prestressed precast rein.-con. bridge Earl Twp., L.R. 36013 (1), Lancaster Co. Bids Feb. 21. CD 1/23.

R. M. Luff Constr. Co., Willow Grove, Pa. LB **$342,995.** sewage treatment plant and imprvs. to sewerage sys., LANSDALE, PA. Lansdale Boro Council, Lansdale, Pa. Bids Feb. 7. CD 12/20.

Laub Constr. Co., 1518 Walnut St., Phila., Pa. CA **$188,274.** general contract Bid No. 3945, bridge superstructure of Bridge No. 625 on line of Wissahickon Ave. over Midvale Branch of Pennsylvania R. R. near Roberts Ave., PHILA., PA. City, Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Jan. 31. CD 1/10.

▲† **Arnold M. Diamond, Inc.**, 50 Court St., Brooklyn, N. Y. LB **$8,145,030** (3 bidders) land reclamation, Farragut Fill and Dewey-Santee Fill, U. S. Naval Academy, NBy 2548, ANNAPOLIS, MD. Officer in Charge of Constr., U. S. Naval Academy, Annapolis, Md. Bids Feb. 21. CD 1/16.

Marocco Constr. Co., 231 S. High St., Baltimore 2, Md. LB **$121 230.** Contr. 546 D. S. & W., Items 13, 14 and 15, TOWSON, MD. Comrs. Baltimore Co., County Office Bldg., Towson, Md. Bids Feb. 14. CD 1/31.

Sullivan Constr. Co., 3015 Greenmount Ave., Baltimore 18, Md. LB **$77,698** (7 bidders) Contr. 541 S, Catonsville Intercepting Sewer, First District, TOWSON, MD. County Executive, Baltimore Co., County Office Bldg., Towson, Md. Bids Feb. 15. CD 1/31.

BUILDINGS—LB & CA

T. Moriarty & Son, 501 Coney Island Ave., Brooklyn 18, N. Y. CA Est. **$344,000.** 3 story BUILDING for teaching sisters at 286-300 E. 18 St., BROOKLYN, N. Y. Roman Catholic Church of Holy Innocents, 279 E. 17 St., Brooklyn, N. Y. CD 4/27/56.

▲ **George F. Driscoll Co.**, 41 E. 42 St., New York, N. Y. CA $5,200,000. PHARMACY-CLASSROOM and FACULTY RESIDENCE, HILLCREST, N. Y. St. John's University, 75 Lewis Ave., Brooklyn, N. Y. CD 6/22/53.

▲ **Hilaire Estates**, c/o Stanley Klein, archt., 89-31 161 St., Jamaica, N. Y. Owner Builds. $1,600,000. 96 HOUSES, Carman Rd., MASSAPEQUA, N. Y.

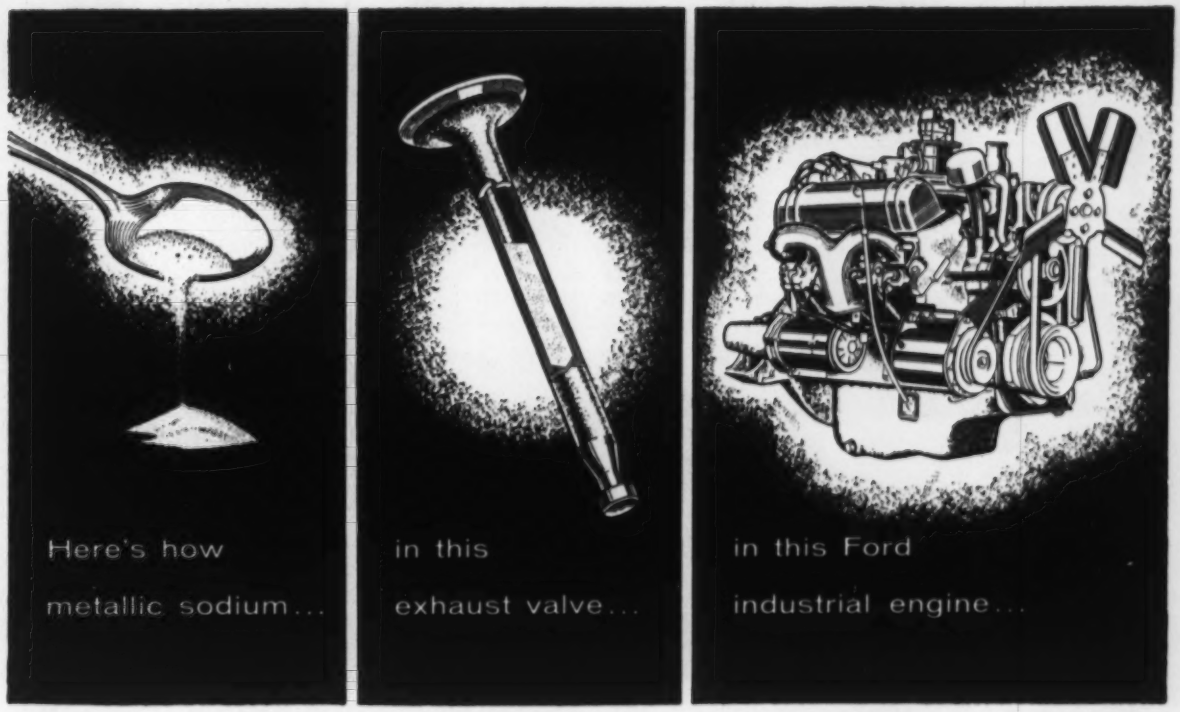
Sherwood Park Homes, c/o Long Island Homes, 168-12 Hillside Ave., Jamaica, N. Y. Owner Builds. $900,000.

(Continued on page 116)

LITTLEFORD SPRAYMASTER

saves an hour a day spraying time

Two-section full area circulating mechanically operated spray bar heats to spraying temperature faster, saves 5 minutes on every load. Patented damper heats pump, main valve and piping 30 minutes faster than any other distributor. These and other exclusive Littleford features save you over an hour a day. 800 to 2000 gallon tank capacity. Write for bulletin 14. Littleford Bros., Inc., dept. LB-190A, 415 E. Pearl St., Cincinnati 2, Ohio, U.S.A.



Cuts "downtime" ...lowers maintenance costs ...lengthens valve life

Sodium-cooled exhaust valves in every Ford 332 industrial engine make a major contribution towards extending Ford valve life.

You see . . . under severe, prolonged operation, Ford sodium-cooled valves prove far more durable than solid stem valves. When subjected to heat, the sodium turns into a liquid and as it moves up and down, it carries heat away from the valve head much faster than solid stems do. This, combined with integral valve guides, allows the valve head to operate up to 225° cooler. Result: a cleaner, more burn-free longer-lasting valve face—a more dependable engine.

Sodium-cooled valves are but one of *many* engine advancements Ford offers you. To name a few: deep-block construction, short-stroke design, overhead valves—yours in a full line of 4-, 6- and 8-cylinder engines, including a new super-efficient diesel.

And when it comes to service—see the Ford Industrial Products Dealer in your area. He has the facilities and experience to *keep* your Ford engine on the job—making money for you.

Ford
INDUSTRIAL ENGINES
AND POWER UNITS

INDUSTRIAL ENGINE DEPARTMENT • FORD Division of FORD MOTOR COMPANY

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

(Continued from page 114)

50 HOUSES, Manetto Hill Rd. and Main Parkway south of Northern State Parkway, PLAINVIEW, N. Y.

▲ **S. S. Silberblatt, Inc.**, 25 W. 45 St., New York 19, N. Y. LB **$25,875,100.** (3 bidders) construct and finance 1,685 HOUSING units, Armed Services Housing Proj., (Capehart), Inv. 36-636-57-36, PLATTSBURGH, N. Y. Base Procurement Office, Plattsburgh Air Force Base, N. Y. Bids Feb. 19. CD 1/30.

▲ **Caye Constr. Co.**, 356 Fulton St., Brooklyn, N. Y. CA Est. **$2,000,000.** superstructure for POWER STATION, Unit 3, PORT JEFFERSON, N. Y. Long Island Lighting Co., 250 Old Country Rd., Mineola, N. Y. Ebasco Services, Inc., 2 Rector St., New York 6, N. Y., engr. CD 12/13/55.

▲ **Leon D. DeMatteis Constr. Co.**, 827 Elmont Rd., Elmont, N. Y. CA **$875,532.** general constr. Mandalay Elementary SCHOOL; CA **$851,096.** general constr. Forest Lake SCHOOL, WANTAGH, N. Y. Bd. Educ., Wantagh, N. Y. Bids Jan. 12. CD 10/11.

Mandalay Homes, c/o Henry A. Klar Realty Co., 220-02 Horace Harding Blvd., Bayside Hills, N. Y. Owner Builds. **$360,000.** 24 HOUSES on tract at Lynbrook St. and Babylon St., WANTAGH, N. Y.

▲ **Messick Bros.**, 531 E. Commerce St., Bridgeton, N. J. LB **$1,729,474.** 1 and 2 story, brick-block, steel SENIOR HIGH SCHOOL on 500x650 ft. plot area, BRIDGETON, N. J. Bd. Educ., Bridgeton, N. J. Bids Feb. 5. CD 1/30.

▲ **Terminal Constr. Corp.**, State Hy. No. 17, Wood-Ridge, N. J. LB **$6,154,000.** (4 bidders) general constr., two 13 story BUILDINGS, five 14 story BUILDINGS, JERSEY CITY, N. J. Jersey City Housing Auth., City Hall, Jersey City, N. J. Kelly & Gruzen, 80 Fifth Ave., New York 3, N. Y. Bids Feb. 5. CD 1/8;
Astrove Plumbing & Heating Corp., 36-14 32 St., Long Island City, N. Y. LB **$967,000.** (4 bidders) plumbing work (Jersey City, N. J.);
E. J. Wohrle, Inc., 15 Bergen Blvd., Fairview, N. J. LB **$629,982.** (3 bidders) heating work (Jersey City, N. J.);
W. L. Schoonover & Co., and Mayer Elec. Service, 164 Emmert St., Newark, N. J. (joint venture) LB **$595,000.** (5 bidders). electrical work (Jersey City, N. J.).

Irwin & Leighton, Inc., 1505 Race St., Phila., Pa. CA **$350,000.** 1 story, brick veneer, concrete block central OFFICE, LAUREL SPRINGS, N. J. New Jersey Bell Telephone Co., 540 Broad St., Newark, N. J. Frank Grad & Sons, 1180 Raymond St., Newark, N. J., archts.

▲ **Isaac Putterman**, 120 Broadway, New York 7, N. Y. Owner Builds. **$1,000,000.** Midtown SHOPPING CENTER, Morris and Spring Sts., MORRISTOWN, N. J. Schulman & Soloway, 161-10 Jamaica Ave., Jamaica, N. Y., archts. **(Correction**—location of project). CD 2/21, under N. Y., Morristown.

George Theodore & Son, 5 S. Washington Ave., Margate, N. J. Separate Contracts. **$960,000.** RESIDENTIAL DEVELOPMENT, 120 units, Maple Hollows Park Section, PLEASANTVILLE, N. J.

Ward Homes, Rte. 49, R. D., Bridgeton, N. J. Separate Contracts. **$344,000.** RESIDENTIAL DEVELOPMENT, Landis Ave., SEA ISLE CITY, N. J. William L. Duble, 1113 Park Dr., Erlton, N. J., archt.

Benjamin Glazer, 1708 Race St., Phila., Pa. Separate Contracts. **$690,000.** RESIDENTIAL DEVELOPMENT, 46 units, Prospect Highland Section, TRENTON, N. J.

Klein Development Corp., 120 Eggerts Crossing Rd., Trenton, N. J. Separate Contracts. **$729,000.** RESIDENTIAL DEVELOPMENT, 81 units, Lawrence Acres section, TRENTON, N. J.

State Div. Purchases & Property, State House, Trenton, N. J. Separate Contracts. **$93,096.** POWERHOUSE alteration, WOODBINE, N. J. CD 3/2/53.

Rocco Martell, Inc., Penns Grove, N. J. CA **$100,000.** 1 story, 60x210 ft., block, steel WAREHOUSE, WOODSTOWN, N. J. Earl L. Erdner, Woodstown, N. J. Charles B. Willard, Pennsgrove, N. J., archt.

Wark & Co., 1920 Sansom St., Phila., Pa. CA **$400,000.** SUNDAY SCHOOL addn., ARDMORE, PA. First Presbyterian Church of Ardmore, 116 Mill Creek Rd., Ardmore, Pa. Harold E. Wagner, 117 S. 17 St., Phila., Pa., archt.

▲ **Frank H. Wilson Co.**, 125 Coulter Ave., Ardmore, Pa. LB **$1,198,760.** general constr. Central JUNIOR HIGH SCHOOL, CHESTER, PA. School Dist., Ninth and Crosby Sts., Phila., Pa. Bids Feb. 5. CD 1/4.
William W. Rumford Co., 113 E. Eighth St., Chester, Pa. LB **$1,101,000.** conversion of Clayton Elementary School into JUNIOR HIGH SCHOOL. (Chester, Pa.).

Anthony M. Pastella, 105 Moorehead Ave., West Conshohocken, Pa. Separate Contracts. **$570,000.** RESIDENTIAL DEVELOPMENT, CONSHOHOCKEN, PA.

A. C. Shand, Devon, Pa. Separate Contracts. **$490,000.** RESIDENTIAL DEVELOPMENT, Timber Lane, DEVON, PA.

▲ **Binkele Constr. Corp.,** 315 W. Mifflin St., Lancaster, Pa. CA **$1,000,000.** 1 and 2 story, brick, rein.-con. STORE, parking area, required grading, LANCASTER, PA. Sears Roebuck & Co., 4640 Roosevelt Blvd., Phila., Pa. Dittrick & Gibson, 8 S. Michigan Ave., Chicago, Ill., archts.

Waldron Constr. Co., c/o Michael Rothman, 12 Bennington Rd., Havertown, Pa. Separate Contracts. **$660,000.** RESIDENTIAL DEVELOPMENT, 16 units, Merion and Rockland Rds., MERION, PA.

▲ **Ambler Development Corp.,** 2901 Cheltenham Ave., Phila., Pa. Separate Contracts. **$1,000,000.** RESIDENTIAL DEVELOPMENT, 80 units, Verree Rd., PHILA., PA.

▲ **Curtis Bailey Co.,** 69 and Walnut Sts., Phila., Pa. Separate Contracts. **$2,500,000.** RESIDENTIAL DEVELOPMENT, 200 units, 20 St. and Packer Ave., PHILA., PA.

▲ **Heritage, Inc.,** Valley Forge Center, Bridgeport, Pa. Separate Contracts. **$3,000,000.** RESIDENTIAL DEVELOPMENT, 250 units, various locations, PHILA., PA.

LeDonne Constr. Co., Inc., 111 St. Clair Ave., Clairton, Pa. LB **$628,888.** 2 story, 72x445 ft., steel, brick Clara Barton SCHOOL, West Mifflin, PITTSBURGH, PA. School Dist. of West Mifflin, West Mifflin, Pa. Bids Jan. 31. CD 1/7.

Philip Macht, 11 E. Lexington St., Baltimore 2, Md. Owner Builds. **$369,000.** fourty-five 2 story, 16x32x25 ft., brick DWELLINGS, Homesdale Ave. and 4900 block Sinclair Lane, BALTIMORE, MD.

Whiting-Turner Contg. Co., National Marine Bank Bldg., Baltimore 2, Md. CA **$450,000.** five brick, concrete MANUFACTURING BLDG. addns., BALTIMORE, MD. The Glidden Co., 3901-3915 Hawkins Point Rd., Baltimore, Md. Turpin, Wachter & Assoc., 1004 N. Charles St., Baltimore 1, Md., engrs.

Columbia Specialty Co., 4925 Bradley Blvd., Chevy Chase, Md. Owner Builds. **$500,000.** 6 story OFFICE at present site, CHEVY CHASE, MD. John d'Epagnier, 1004 Ripley St., Silver Spring, Md., archt.

▲ **Anthony P. Miller, Inc.,** 3333 Arctic Ave., Atlantic City, N. J. LB **$15,030,727.** construct and finance armed services HOUSING (Capehart), ENG-18-020-57-26, FORT GEORGE G. MEADE, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore 18, Md. Bids Feb. 19. CD 2/14, under LB.

Owner, c/o John d'Epagnier, archt., 1004 Ripley St., Silver Spring, Md. Owner Builds. **$840,000.** 8-story 120-unit APARTMENT, 25 St. N. W. between Eye and K Sts., **WASH., D. C.**

SOUTH

HEAVY CONSTRUCTION—BA

Fla., Surfside—BA 3/11—Town, Town Hall, F. M. Bowen, mgr., 9550 Harding Ave., water storage facilities.

† **Fla., Pensacola**—AIR CONDITIONING, etc.—BA 3/12—Officer in Charge of Constr., Bldg. 45, Naval Station, Pensacola, air conditioning and control tower alterations, Bldg. 908, Alf Ellyson, NBy-7793, Spec. 7793/56. CD 8/27.

† **Va., Little Creek**—ROOFS REPLACEMENT—BA 3/13—Officer in Charge of Constr., P. Wks. Bldg., 3164 U. S. Naval Amphibious Base, Little Creek, replacement of roofs, Buildings 3148, 3324, 3326, 3358 and 3359, U. S. Naval Amphibious Base, NBy-3487, Spec. 3487/57. CD 3/27/53.

Va., Fairfax—BA 3/14—Bd. Supervs. Fairfax Co., Fairfax, integrated sewerage sys., Contract 80, Dogue Creek Trunk Sewer. CD 12/22/53.

† **Fla., Orlando**—BA 4/2—U. S. Eng., Box 4970, Jacksonville, altering hydrant fueling system (FY-55) Chapel Bldg. (FY-56) remove pit covers, install 6 sump pumps, hydrants, valves, repairs in Chapel Bldg., Pinecastle Air Force Base, ENG-08-123-57-30. CD 1/28.

BUILDINGS—BA

Va., Fort Lee—HOUSING—BA 3/14—Procurement Officer, Fort Lee, 30-unit Capehart family housing, site imprvs. and 30 buildings, ENG-44-110-57-17, $525,000. Lublin, McGaughy, McMillan Assocs., 220 W. Freemason St., Norfolk, engrs-archts.

Ky., Newport—HOUSING—BA 3/28—Newport Municipal Housing Comn., Fourth and York Sts., seven 2 story brick bldgs., 50 housing units, Isabella St. $600,000. Plans deposit $50. Meriwether Marye & Assoc. 248 Short St., Lexington, archts. Proctor & Ingels, 915 S. Limestone St., Lexington, engrs. CD 10/8.

▲ **W. Va., Morgantown**—HOSPITAL—BA 4/10—Bd. Governors West Virginia University, Administration Bldg., hospital, W. Va. University Medical Center. $1,300,000. Plans deposit $400. C. E. Silling & Assocs., Masonic Temple Bldg., Charleston, archts. CD 2/17.

BUILDINGS—SLC

Fla., Cocoa—DISTRIBUTION PLANT, etc.—Borden's Dairy, 148 W. South St., Orlando, soon lets contract distribution plant, warehouse, storage rooms, office, loading platform. Pullura, Bowen & Watson, 2918 Grand Ave., Tampa, archts.-engrs.

▲ **Ky., Louisville**—HOSPITAL—Our Lady of Peace Hospital, Newburg Rd., soon lets contract hospital addn. $1,000,000. Thos. J. Nolan & Sons, Kentucky Home Life Bldg., Fifth and Jefferson Sts., Zone 1, archts.

HEAVY CONSTRUCTION—LB & CA

† **James T. Copley,** 810 Loudun Ave., Portsmouth, Va. LB **$243,319** (12 bidders) battalion headquarters, Special AAA Site N52-C, ENG-44-110-57-14, near Portsmouth, VIRGINIA. U. S. Eng., foot of Front St., Norfolk 1, Va. Bids Feb. 7. CD 1/22.

Blackwell Eng. Co., Warrenton, Va., LB **$365,018** (4 bidders) Base Bid and Alt. A, LB **$457,918** Base Bid and Alt. B, gravity service water storage tanks, 24 St. North and North Woodrow St., Stage II, Contract 7, ARLINGTON, VA. Arlington Co. Court House, Arlington, Va. Bids Feb. 19. CD 1/31.

† **Brewster—Ramond Co.,** 2048 Third St., Cleveland, O. LB **$148,986** (5 bidders) relaying tracks and turnouts, Norfolk Naval Shipyard, NBy-7605, Spec. 7605/56, PORTSMOUTH, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Feb. 19. CD 1/31.

▲† **Virginia Eng. Co. Inc.,** 80 29 St., Newport News, Va., LB **$1,234,000** (7 bidders) addnl. magazines, U. S. Naval Mine Depot, NBy-7695, YORKTOWN, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Feb. 21. CD 1/11.

▲ **SOUTH CAROLINA**—State Hy. Dpt., Columbia,
S. C.—**Satterfield Constr. Co.,** Greenwood, S. C., LB **$142,080.** (11 bidders) bt. surf. 4.25 mi. Road S-99, 2.143 mi. Roads S-176, 2.462 mi. Road S-247, 2.641 mi. Road 406, 1.564 mi. Road 1335, S. C. Dockets Nos. 20.297, 20.208 and 40.456. F. A. Proj. S-549 (3), S-778 (2) and S-965 (2), Fairfield and Richland Counties; LB **$154,514** bit. surf. 1.998 mi. Road 82, 1.22 mi. Road 127, 0.261 mi. Road 236; 1.487 mi. Road 117, 2.691 mi. Roads 235 and 43; 0.364 mi. Road 51; 1.291 mi. Roads 122 and 132, 0.937 mi. Road 107, 2.259 mi. Roads 152 and 118, S. C. Docket 41.302, Saluda Co.;
S. C.—**Sharpe Constr. Co., Inc.,** Turbeville, S. C., LB **$86,458** (7 bidders) bit. 2.477 mi. Road S-19; 3.095 mi. Road S-681; 1.543 mi. Road S-366, 2.039 mi. Road S-364. S. C. Dockets Nos. 16.366 and 16.367. F. A. Proj. S-998 (1), S-1014 (1) and S-1015 (1), Darlington Co.; LB **$107,366** (7 bidders) bit. surf. 2.847 mi. Road 45, 2.416 mi. Road 164, 1.878 mi. Roads 112 and 193, 3.361 mi. Road 193, S. C. Docket 21.411, F. A. Proj. S-332 (2), S-737 (2), S-822 (2) and S-1061 (1), Florence Co.;
S. C.—**J. F. Cleckley & Co.,** Orangeburg, S. C., LB **$165,114** (6 bidders) b. conc. resurf. 12.8 mi. State Route 46, 6.1 mi. State Route 462 and 2.4 mi. Road 13, S. C. Docket No. 7.1027, Beaufort Co.;
S. C.—**Theo Brothers,** Woodruff, S. C., LB **$220,345** bit. surf. 8.908 mi. Route 296. S. C. Docket No. 42.446, F. A. Proj. S-942 (3), Spartanburg Co;
S. C.—**Suber & Co., Inc.,** Whitmire, S. C., LB **$1,077,341** (7 bidders) b. conc. surf., concrete curb and gutter, concrete sidewalk 5.238 mi. U. S. Route 176, S. C. Docket 42.434.1, F. A. Proj. U 2604 (3), UG 2604 (4), IN-312-1 (1), F 2604 (1) and U. S. 986 (1), Spartanburg Co.;
S. C.—**Ballenger Paving Co.,** Paris, S. C., LB **$85,815.** (5 bidders) bit. surf. 2.171 mi. Road S-279, 1.759 mi. Road S-288; 0.879 i. Road S-118, 0.5 mi. Roads S-1125, S-952, S-123, S-161, S-406, 0.486 mi. Roads S-1111, S-405, S-1110 and S-1109, 0.436 mi .Roads S-207, S-864, S-1108 and S-85, 1.852 mi. Roads S-1115, S-208, S-944, S-1116, S-159, S-943, S-1114, S-814, S-941, S-1113, S-209, S-940, S-411 and S-1117, 0.494 mi. Roads S-1028 S-1107 and S-214, S. C. Dockets Nos. 38.469 and 38.370, F. A. Projs. S-789 (2), S-1057 (1), Orangeburg Co.;
S. C.—**Asheville Constr. Co.,** London Rd., Biltmore, N. C., LB **$219,212** (12 bidders) grading, drainage 7.105 mi. Roads 57 and 171, S. C. Docket 37.377, F. A. Proj. S-1063 (1), Oconee Co.;
S. C.—**Ralph W. Crowe,** Woodruff, S. C., LB **$76,603.** bit. surf. 2.5 mi. Roads S-229 and 100, 2-746 Road 148, 1.121 mi. Road 227, S. C. Dockets 23.407 and 30.350, Greenville and Laurens Counties;
S. C.—**Fox Constr. Co. Inc.** Lexington S. C., LB **$160,531.** (4 bidders), bit. surf. 2.772 mi. Road S-30, 1.612 mi. Road S-138; 0.27 mi. Road S-276 and S-277, 1.219 mi. Road S-325 0.374 mi. Road S-255, 6.033 mi. Roads S-61, S-161, S-233, S-234, S-236, S-237, S-41, S-42, S-239, S-241, S-242, S-243, S-381, S-717-S-151, S-154, S-87, S-89, S-167, S-782, S-113, S-107, S-108, S-221 and S-222, S. C. Dockets Nos. 22.326, 22.327 F. A. Projs. S-997 (1) and S-1062 (1) Georgetown Co.;
S. C.—**Santee Constr. Co. Inc.,** Walterboro, S. C., LB **$168,182.** (6 bidders), bit. surf. 0.948 mi. Road S-39, 2.048 mi. Road S-69, 3.81 mi. Road S-84, 1.97 mi. on Road S-95, 3.5 mi. Road S-117 1.103 mi. Road S-75 1.723 mi. Road S-82 S. C. Docket Nos. 15.317 and 15.318, F. A. Proj. S-1021 (1), S-242 (4), S-1025 (1) S-1051 (1), Colleton Co.;
S. C.—**Carolina Contg. Co., Inc.,** 1042 Adeline Dr. Columbia S. C., LB **$137,015** (6 bidders) bit. 1.868 mi. Road 579, 1.458 mi. Road 254 1.342 mi. Road 580, 1.80 mi. Road 581, 1.656 mi. Road 582, 0.319 mi. Roads 591 and 592, 3.362 mi. Roads 583 thru 590 and 609 thru 617, S. C. Dockets 2.396 and 2.397 mi. F. A. Proj S-1034 (1) and S-1035 (1), Aiken Co.;
S. C.—**Reeves Bros. Constr. Co. Inc.,** 106 N. 1 St., Easley, S. C., LB **$127,954** (6 bidders), bit. surf. 2.568 mi. Road 85; 1.64 mi. Road 162; 1.159 mi. Route 72 0.687 mi. Road 123; 1.516 mi. Road 163 0.674 mi. Road 164, S. C. Dockets Nos. 1.298 1.299 and 1.300, F. A. Proj S-937 (2) and S-1029 (1) Abbeville Co. Bids Feb. 19. CD 2/6.

FLORIDA—State Road Dpt., Tallahassee.
Coffee Constr. Co., Eastman, Ga., CA **$650,222.** limerock base with b. conc. binder course, one 225 ft. concrete slab bridge on concrete piling 7.499 mi. SR 20, F 016-2 (15), Job 3802-204 (US 19), Taylor Co. Bids Feb. 12. CD 2/18, under LB.

J. W. Meadors & Co., Box 6353, 641 Cassat Ave., Jacksonville, Fla., LB **$565,400.** Mainland Water Treatment Plant addns., revisions, Contr 1957-57, DAYTONA BEACH, FLA. City, City Hall, Daytona Beach, Fla. Bids Feb. 12. CD 1/9.

▲† **Southern Constr. Co.,** Old Savannah Rd., Augusta, Ga. CA **$1,144,653.** four airmen's dormitories, Columbus Air Force Base, COLUMBUS, MISS. U. S. Eng., 2301 Grant St., Mobile, Ala. Bids Feb. 7. CD 1/15, under LB.

▲† **R. B. Tyler & Co.,** 1446 Levering St., Louisville, Ky. and **Hyde Constr. Co.,** 1804 N. Mill St., Jackson, Miss. (joint venture) CA **$1,645,271.** exten. existing runway at Key Field, MERIDIAN, MISS. U. S. Eng., 2301 Grant St., Mobile, Ala. CD 1/29, under LB.

(Continued on page 119)

NEW B Tournapull

Lively bell heaps capacity-load fast. Low push-block gives direct-line application of power from pusher to blade. Smooth, wide side-arms and side-sheets can't trap chunky materials. Inside bowl has no exposed reinforcement ribs to hinder dirt movement. Curved tailgate increases boiling action, fills all corners, heaps low-void payloads fast for bigger profit!

with 27-yd. FULLPAK scraper

New, low, wide B Fullpak scraper gets *big* loads *fast!* Designed for lowest-cost dirtmoving, it incorporates the same exclusive high production features of the 18-yd. C Fullpak Tournapull, proved in world-wide service for more than a year. This new companion 27-yard B Fullpak loads just as fast. Here's why:

Low, wide bowl — New B Fullpak bowl bottom has only 1° rise. In loading, dirt flow is nearly horizontal — packs full-capacity, low-void payloads quick and easy.

Better boiling — Tailgate has curved top to roll material into the heap, fill all corners. High-heap side-sheets reduce spillage, help pack material into corners.

High apron lift — Raises 7'1" above blade, speeds loading and unloading. Smooth, streamlined side-arms and side-sheets prevent chunky materials from being trapped. Deeply curved apron adds payload capacity . . . carries more of the load forward for better weight distribution and low center of gravity.

10 speeds — Heavy-duty transmission provides ten gear ratios, from 2.6 to 28.4 mph. Low gear matches pusher speed, enables 293 hp B Fullpak to help itself in loading, gives full lugging power for pulling through soft, spongy footing. This combination of 10 speeds, plus clutch-brake for fast shifting, means hauling at higher speeds . . . more pay-yards per hour.

Effortless control — Push-button electric control, and electric power-steer through geared kingpin, make handling easy. All-weather electric motors at points of action give instant steering and scraper control.

These are but a few of the many plus-values awaiting you in this new 27-yd. B Tournapull. Get the complete story . . . see how this BIG "B" with new *fast-loading* Fullpak scraper can earn big dividends for you! Write for full details.

High-lift apron, and positive forward-ejection tailgate, speed loading and unloading. Deeply curved apron adds dirt capacity, carries a big part of the load forward for better weight distribution, low center of gravity, and greater stability. Wheels inside cutting edge aid in precision grading, permit cutting against bank.

Brief specifications for New B Fullpak Tournapull:

Capacity: Tons 32.5
Heaped, cu. yds. 27
Struck, cu. yds. 19.1

Power: 293 hp Cummins Diesel

Tires (std.): Four 27 x 33 — 30-ply rating

Speeds: Ten forward 2.6 to 28.4 mph
Two reverse 2.4 to 3.5 mph

Turning angle: 90° left or right

Width required for 180° turn: 39'10"

Control: Fingertip Electric

Brakes: Multiple-disc air brakes with 6552 sq. in. of braking surface

Dimensions:
Length .....44'0"
Width .....11'8½"
Height .....12'2¼"
Wheelbase ....26'10"

Shipping Weight (approx. lbs.) 68,900

(Specifications subject to change without notice)

Fullpak—Trademark; Tournapull—Trademark Reg. U.S. Pat. Off. BP-1402-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

You need "hit-and-run"

Hauls fill for road shoulders

dirtmovers to supplement your "home-run" hitters

Every "big" dirtmoving job breaks down into work sections . . . some suitable for "big" equipment . . . some suitable for "small" equipment.

The improved D Tournapull fills the need for a fast, flexible, self-propelled scraper which works economically on both big and small-yardage assignments and on both long and short hauls.

Its capacity is 7.3 cubic yards, struck, or 9 cubic yards, heaped. It is large enough and fast enough for profitable use in pusher fleets . . . yet small enough for one-man self-loading. It cuts delays and expense for small-yardage sections, clean-up, access roads, shoulders, drainage and other headache jobs that normally eat into your profits.

Not only is the "D" highly versatile, but it runs from one location to the next at speeds to 29.5 mph. You can road it over highways without special permit, because the improved "D" is only 8′ wide, with axle-load under the 9-ton limit. It works fast . . . moves more earth in less time than big crawler tractor-scraper combinations costing thousands of dollars more than this Tournapull-Scraper.

Pictures show some of typical applications. Look over your current dirtmoving projects and you'll find many of these assignments . . . and others . . . where "D" can speed completion and cut your costs.

If you want more information on the D Tournapull, call or write for full details. Find out how this "hit-and-run" tool can supplement your bigger machines for bigger profits.

Tournapull—Trademark Reg. U. S. Pat. Off. DP-885-G-bw

Backfills around buildings

Shapes backslopes

Fine-grades before paving

Blades shoulders

Cuts drainage ditches

Spreads gravel

Handles clean-up

Spreads top-dressing

Fills hoppers

Does production dirtmoving

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

(Continued from page 116)

▲† **T. L. James & Co.,** Box 531, Ruston, La. LB **$8,775,600.** taxiway and aprons paving at Naval Auxiliary Air Station, NBy 6394, NEW IBERIA, LA. Officer in Charge of Constr., Eighth Naval Dist., Bldg. 16, U. S. Naval Station, New Orleans, (Algiers), La. Bids Feb. 20. CD 1/11.

▲† **Allen M. Campbell Co.,** Box 836, Tyler, Tex. LB **$1,334,781** (3 bidders) enlisted men's barracks at U. S. Naval Auxiliary Air Station, NBy 6405, NEW IBERIA, LA. Eighth Naval Dist., Bldg. 16, U. S. Naval Station, New Orleans, La. Bids Feb. 19. CD 1/23.

BUILDINGS—LB & CA

Sawyer Constr. Co., P. O. Box 179, Hampton, Va., LB **$502,000** (3 bidders) Girls' DORMITORY and 2 DORMITORY COTTAGES, NEWPORT NEWS, VA. Virginia State School, Newport News, Va. E. Tucker Carlton, 206 E. Cary St., Richmond, Va., archt. Bids Feb. 21. CD 12/11/52.

L. P. Cox Co., Sanford, N. C. CA **$362,239.** 50,000 sq. ft. Chestnut HIGH SCHOOL, FAYETTEVILLE, N. C. Cumberland Co., Bd. Educ., Fayetteville, N. C. Arthur C. Jenkins Jr., Fayetteville, N. C., archt. CD 6/5.

Brooks Lumber Co., 302 W. Lee St., Greensboro, N. C., CA **$866,866.** Walter Hines Page SENIOR HIGH SCHOOL, GREENSBORO, N. C. City, Bd. Educ., 617 Simpson St., Greensboro, N. C. Bids Feb. 12. CD 1/24.

Fowler-Jones Constr. Co., Reynolds Bldg., Winston-Salem, N. C. CA **$554,100.** Ardmore-Granville SCHOOL and Easton Elementary SCHOOL, WINSTON-SALEM, N. C. School Comrs., Winston-Salem, N. C. Bids Jan. 24. CD 1/25.

H. G. Tinker, Box 131, Macon, Ga., LB **$622,000.** Canterbury Road Boys HIGH SCHOOL, MACON, GA. Bd. Educ., City Hall, Macon, Ga. W. Elliott Dunwoody, Jr., 646 Arch St., Macon, Ga., archt. Bids Feb. 14.

▲ **Coit, Summers Co.,** Vidalia, Ga., LB **$1,439,000.** Walker Parke ELEMENTARY SCHOOL, Loganville HIGH and ELEMENTARY SCHOOL and Youth-Walnut Grove ELEMENTARY SCHOOL (White) addn. and mech., remodeling, Social Circle ELEMENTARY and HIGH SCHOOL, Good Hope ELEMENTARY SCHOOL for colored and Social Circle TRAINING SCHOOL for colored; Walton County Carver HIGH SCHOOL and Good Hope ELEMENTARY SCHOOL, MONROE, GA. State School Bldg. Auth., 244 Washington St., S.W., Atlanta, Ga. Bids Feb. 21. CD 1/23.

▲ **R. H. Wright Jr. & Assoc.,** P. O. Box 1580, Columbus, Ga., LB **$1,078,000.** Rome SENIOR HIGH SCHOOL and South Rome ELEMENTARY SCHOOL (colored) ROME, GA. State School Bldg. Auth., 244 Washington St. S.W., Atlanta, Ga. Bids Feb. 19.

Edwards Constr. Co. Inc., 4203 Ponce de Leon Blvd., Coral Gable, Fla., LB **$592,000.** H & B OFFICE BLDG., N. Krome Ave. and N.W. 19 St., HOMESTEAD, FLA. Irwin Hays & William Berger, 970 Krome Ave., Homestead, Fla. Bids Feb. 19. CD 1/28.

▲ **Bradford Builders, Inc.,** 1101 Lincoln Rd., Miami Beach, Fla., LB **$1,031,372.** Madie Ives Elementary SCHOOL, N.E. 205 Terrace and 14 Ave.; Coral Way Village Elementary SCHOOL, S.W. 32 St. and S.W. 85 Ave.; Fleetwood Elementary SCHOOL, N.W. 22 Ave. and N.W. 87 St., MIAMI, FLA. Bd. P. Instruction, Dade Co., Administration Bldg., 275 N.W. 2 St., Miami, Fla. Bids Feb. 20. CD 2/6;
Jefferson Constr. Co., 3128 Coral Way, Miami, Fla., LB **$350,000** Palmetto Elementary SCHOOL, S.W. 124 St. and S.W. 74 Ave. (Miami, Fla.);
Giller & Fryd Constr. Corp., 523 Michigan Ave., Miami Beach, Fla., LB **$372,750.** Mae Walters Elementary SCHOOL, W. 8 Ave. and 44 Place, Hialeah (Miami, Fla.).

Wm. A. Berusse, Jr., Inc., 322 Royal Palm Way, Palm Beach, Fla., LB, Base Bid "A" **$763,000,** Base Bid "B" **$728,000,** Eau Gallie JUNIOR HIGH SCHOOL, Eau Gallie, TITUSVILLE, FLA. Brevard Co. Bd. Pub. Instruction, Titusville, Fla. CD 2/5/56.

Chambers Lumber Co., Athens, Ala., CA **$476,000.** masonry, concrete, steel JUNIOR HIGH SCHOOL, ATHENS, ALA. Bd. Educ., City Hall, Athens, Ala. Evan M. Terry, 2129 Montgomery Hy., Birmingham, 9, Ala., archt. Awarded Feb. 15. CD 1/29.

▲ **Pierce & Gresham,** Decatur, Ala., LB **$1,008,000** (4 bidders) JUNIOR HIGH SCHOOL, HUNTSVILLE, ALA. Bd. Educ., Huntsville, Ala. Bids Feb. 20. CD 1/28.

▲ **Chandler Constr. Co., Inc.,** 3097 Barron Ave., Memphis, Tenn. LB **$1,164,551.** OFF-SITE FACILITIES for Capehart housing units, incl. sewage treatment plant, 3 water wells, elevated storage tank, sewer gas and water lines, ENG-41-243-57-21, FORT POLK, LA. U. S. Eng., Box 1229, Galveston, Tex. Bids Feb. 13. CD 1/23.

▲ **Robert Simmons Constr. Co.,** 840 Barrett Ave., Louisville, Ky. CA **$1,548,000.** 2 story, 172,000 sq. ft., brick, concrete block Consolidated HIGH SCHOOL, FRANKFORT, KY. Franklin Co. Bd. Educ., Capitol Hotel Bldg., Frankfort, Ky. Bids Feb. 14, awarded Feb. 20. CD 2/19, under LB.

▲ **J. A. Jones Co.,** 311 Church St., Nashville, Tenn. LB **$1,100,000.** 1 story, brick, concrete block, 250,000 sq. ft. MFG. PLANT and railroad siding, LEXINGTON, KY. Individual Drinking Cup Co., subsidiary of Dixie Cup Co., c/o The McPherson Co., archts., 408 S. Main St., Greenville, S. C. Bids Feb. 20. CD 2/13.

† **Sullivan & Cozzart,** 822 W. Kentucky St., Louisville, Ky. LB **$627,000.** Naval and Marine Reserve TRAINING CENTER, Naval Ordnance Works, NOy 91447, Spec. 48335, LOUISVILLE, KY. Dist. P. Wks. Office, Fifth Naval Dist., Bldg. N-26, Naval Base,

Advertisement for Bids NORTHERN ILLINOIS TOLL HIGHWAY

Bids to be opened March 28, 1957

CONTRACT T-11B

The work to be done under this Contract shall commence on May 15, 1957, or on such earlier date as may be mutually agreed upon between the Commission and the Contractor. All work under this Contract shall be completed on or before July 31, 1958, and consists of: The grading, drainage, paving, the construction of appurtenances and the erection of precast concrete and structural steel bridges for approximately 4.519 miles of the Edens Spur to the Tri-State Route of the Northern Illinois Toll Highway in Construction Section T-11B thereof, beginning at a point about 1589 feet west of Huehl Road at Northern Illinois Toll Highway Tri-State Edens Spur Centerline Station 26+60 in Northfield Township, Cook County, Illinois and extending easterly to a point approximately 239 feet north of Dundee Road on the Edens Expressway at Northern Illinois Toll Highway Edens Spur Tri-State Centerline Station 264+59.90 in Northfield Township, Cook County, Illinois.

The approximate quantities for the principal items of work are as follows:

Roadway Excavation	625,000 C.Y.
Borrow	812,000 C.Y.
Selected Subgrade	80,900 C.Y.
Granular Subbase	45,800 C.Y.
10" Reinforced PCC Pavement	126,700 S.Y.
3" Bituminous Concrete Shoulders	73,000 S.Y.
Structure Concrete	11,800 C.Y.
Reinforcing Steel	1,641,000 lbs.
Structural Steel, Erection	3,881,000 lbs.

Bids to be opened March 21, 1957

CONTRACT T-2C

The Work to be done under this Contract shall be commenced on May 1, 1957, or on such earlier date as may be mutually agreed upon between the Commission and the Contractor. All work under this Contract shall be completed on or before December 15, 1958, and consists of: The grading, drainage, paving, the construction of appurtenances, and the erection of precast concrete bridges for approximately 2.45 miles of the Tri-State Route of the Northern Illinois Toll Highway in Construction Section T-2C thereof, beginning at a point about 1500' south of 111th Street at Tri-State Route Centerline Station 862+00 in Worth Township, Cook County, Illinois, and extending northerly to a point about 1083' south of 95th Street at Tri-State Route Centerline Station 991+38.35 in Palos Township, Cook County, Illinois.

The approximate quantities of the principal items of work are as follows:

Roadway Excavation	78,000 C.Y.
Special Excavation	48,000 C.Y.
Borrow	1,300,000 C.Y.
Special Fill	53,000 C.Y.
Selected Subgrade	46,000 C.Y.
Granular Subbase	24,000 C.Y.
10" Reinforced PCC Pavement	72,000 S.Y.
3" Bituminous Concrete Shoulders	40,000 S.Y.
Reinforcing Steel	1,300,000 lbs.
Structural Concrete	10,500 C.Y.

CONTRACT T-3B

The work to be done under this Contract shall be commenced on June 30, 1957, or on such earlier date as may be mutually agreed upon between the Commission and the Contractor. All work under this Contract shall be completed on or before December 15, 1958, and consists of: The grading, drainage, paving, the construction of appurtenances, and the erection of precast concrete and steel bridges for approximately 1.24 miles of the Tri-State Route of the Northern Illinois Toll Highway in Construction Section T-3B thereof, beginning at a point about 600 feet northwest of AT & SF Railroad yards at Tri-State Route Centerline Station 1337+55.25 in Lyons Township, Cook County, Illinois, and extending northwesterly to a point about 200 feet north of 71st Street at Tri-State Centerline Station 1402+90.00 in Lyons Township, Cook County, Illinois.

The approximate quantities of the principal items of work are:

Roadway Excavation	775,000 C.Y.
Selected Subgrade	21,000 C.Y.
Granular Subbase	13,000 C.Y.
10" Reinforced PCC Pavement	39,000 S.Y.
3" Bituminous Concrete Shoulders	27,000 S.Y.
Structural Concrete	7,500 C.Y.
Reinforcing Steel	958,000 lbs.
*Structural Steel (erection)	3,863,000 lbs.

THE ILLINOIS STATE TOLL HIGHWAY COMMISSION

20 N. Wacker Dr., Chicago — **By Austin L. Wyman, Chairman**

Write, wire or phone for detailed information and necessary forms, Chief Engineer, Room 1654, 20 N. Wacker Dr., Chicago 6, Ill. Telephone FRanklin 2-7020.

Previously advertised bids for Contracts E-1C and T-9A will be opened March 14, 1957.

Write today for the big, new, 40 page Acker Drill Supplies Catalog. It illustrates and describes over 150 drilling tools and accessories that will save you time and money on auger borings, core drilling and soil sampling.

Yes, send me the new Acker bulletin 50

Name_____ Title_____

Company_____

Street_____

City_____ State_____

ACKER DRILL CO., INC. 725 W. Lackawanna Avenue — Scranton, Penna.

a complete line of Soil Sampling Tools, Diamond and Shot Core Drills, Drilling Accessories and Equipment

Norfolk, Va. Joseph & Joseph, Speed Bldg., Louisville, Ky., archts. Bids Feb. 19. CD 1/16.

▲ **E. I. duPont de Nemours & Co.**, duPont Bldg., Wilmington, Del. Own Forces. $2,500,000. PLANT addn. to mfg. sodium and chlorine, MEMPHIS, TENN. CD 10/11.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **ILLINOIS**—BA 3/14—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,
Contract E-1-C, grading, drainage, paving, appurtenances precast concrete, steel bridges, 527 mi. E. of Rte. 25 extending easterly W. of Rte. 59, Kane and Du Page Counties, $4,000,000. Vogt, Ivers, Seaman & Assocs., 20 N. Wacker Dr., Chicago, section engrs.
Contr. T-9-A, grading, drainage, paving appurtenances precast concrete and steel bridges 2.29 mi. beginning south of Touhy Ave. extending N. of Busse Hy., Cook Co. $2,000,000. H. W. Lochner & Co., 150 N. Wacker Dr., Chicago, section engr. CD 5/11.

BUILDINGS—BA

O., **Cincinnati**—PARKING GARAGE—BA 3/12—City, City Hall, 259-car open deck parking garage, 7 and Sycamore St. $650,000. Plans deposit $15. Felsberg & Gillespie, 6 E 4 St., archts. Karl M. Reik & Assoc., 505 Elm St., consult. engrs. Hanley & Young, 123 E. 6 St., structural engrs. CD 11/13.

O., **Akron**—STUDENT UNION—BA 3/14—University of Akron, Buchtel Hall, Akron, student union bldg. remodeling addn. $780,750. Plans deposit $50. Firestone & Cassidy, 1960 W. Market St., archts. CD 2/26, under LB.

Ill., **Belleville**—CITY HALL——BA 3/18—City Council, City Hall, 2 story, bsmnt. city hall, $825,000. Charles E. King, 19 A North Illinois Ave., archt. CD 6/5.

O., **Wyoming**—SCHOOL—BA 3/16—Bd. Educ., Wyoming Ave., 1 story, brick, rein.-con. elementary school, Reilly Rd. $450,000. Plans deposit $25. A. M. Kinney, Inc., 2905 Vernon Pl., Cincinnati, engr.-archt. CD 1/3.

▲ Ill., **Harvard**—PLANT—BA 3/18—Admiral Corp., 3800 W. Cortland St., Chicago, 150,000 sq. ft. electronics plant addn. $1,500,000. Raymond A. Peterson, 401 Dempster St., Skokie, archt. CD 2/13.

O., **Fairfield**—SCHOOL—BA 3/19—Fairfield Twp. Bd. Educ., 5050 Dixie Hy., elementary school $758,000. Plans deposit $20. Frederick J. Winkler, 814 First Natl. Bank Bldg., Hamilton, archt. CD 11/26.

† Ill., **Great Lakes**—BARRACKS, etc.—BA 3/21—Ninth Naval Dist., Great Lakes, four 3 story 132x403 ft. barracks, 260x340 ft. subsistence bldg., 3 story, 123x243 ft. classroom bldg. and 3 story, 112x134 ft. brick, concrete framing ships company barracks, $900,000. CD 6/28/51.

O., **Cincinnati**—SCHOOL—BA 3/26—Bd. Educ., 608 McMillan St., 1 story, brick Fairview Elementary School addn., Stratford Ave. $575,000. E. J. Schulte, 920 E. McMillan St., archt. Bodenstein & Schuster, 9 and Main Sts., Cincinnati, engrs. CD 7/23.

▲ Mich., **East Lansing**—HOUSING—BA 4/23—State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., 300 S. Walnut St., married students housing, Michigan State University. $6,000,000 Manson & Carver, 517 N. Washington St., Lansing, archts. CD 3/5/56.

BUILDINGS—SLC

▲ Ill., **Chicago**—OFFICE—Jewish Federation of Chicago, 231 S. Wells St., soon lets contract 6 story, brick office bldg., Franklin and Madison Sts. $1,500,000. A. Epstein & Sons, 2011 W. Pershing Rd., archts. CD 7/2.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—Dpt. Hys., Columbus, Zone 15,
O.—**Ohio Road Paving Co.**, 30 E. Broad St., Columbus, O. LB $85,340. (1 bidder) Type T-35, 2.638 mi. SR 8-14.26, Stark Co.; LB $127,016 (2 bidders) Type 35 1.12 mi. SR 44-11.27, Stark Co.;
O.—**Nilen Black, Inc.**, 706 E. Highland Ave., Wooster, O. LB $276,537. (11 bidders) Type T-35 on B-119, structure 0.606 mi. SR 60-31.75, S-SG-1131 (2), Ashland Co.;
O.—**Don S. Cisle, Contractor, Inc.**, 808 First Natl. Bank Bldg., Hamilton, O. LB $1,513,948 (4 bidders) Type T-35, 5.317 mi. SR 125-0.00, F-151 (2) Clermont Co.;
O.—**The Thorpe Constr. Co.**, 109 N. Union St., Akron, O. LB $198,956. (2 bidders) Type T-35, 1.137 mi. SR 82-6.13, F-444 (5), Summit Co.;
O.—**Walter L. Follmer**, P.O. Box 173, Hamilton, O. LB $177,210. (5 bidders) Type T-35, structure 0.715 mi. SR 123-(28.29-21), S-658 (5), Warren Co.;
O.—**The Heffner Constr. Co.**, 509 N. Main St., Celina, O. LB $297,023. (10 bidders) Type T-35, 4.051 mi. SR 117-(24.55-24.57) Allen Co.;
O.—**W. E. Engle**, McArthur, O. LB $86,915. (5 bidders) grading, draining, 0.085 mi. SR 125-8.07, Brown Co.;
O.—**Odell Constr. Co.**, R.D. No. 1, Painesville, O. LB $433,979. (5 bidders) Type T-35, structures 0.518 mi. SR 93-(7.68-8.02), Summit Co.;
O.—**W. P. McCarren Co.**, Walhonding, O. LB $118,464. (5 bidders) Type T-30 and T-35, 18.55 mi. Lucking and Muskingum Counties. Bids Feb. 19. CD 1/29.

▲ **Comrs Trumbull Co.**, Court House, Warren, O., rejected bids Dec. 12, water sys. to serve Hubbard and Liberty Twps., WARREN, O. LB $2,244,681. CD 12/17, under LB.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,
Allied Structural Steel Co., 20 N. Wacker Dr. Chicago, Ill., LB $1,348,726. Contrs. SNI-3A and SNI-3B, furnishing, fabricating, delg. 6,320,000 lb. steel for superstructure of 3 bridges on Tri-State Tollway and 2 on East-West Tollway. Bids Feb. 14. CD 1/28.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,
ISTHC—**Contracting & Material Co.**, 1235 Dodge St., Evanton, Ill., **Kenny Constr. Co.**, 3220 Oakton St., Skokie and **Louis Garavaglia**, Centerline, Mich., LB $5,440,000. Contr. E-2-A, grading, drainage, paving, appurtenances, precast concrete and steel bridges 7.93 mi. of the East-West Route Cook and DuPage Counties.
ISTHC—**Standard Paving Co.**, 30 N. La Salle St., Chicago, and **Peter J. Crowley Co.**, Box 144, Maywood, Ill., LB $3,547,539. Contr. N3B, grading, drainage, paving appurtenances, precast concrete bridges 6.12 mi. beginning 600 ft. E. of Town Hall Dr. and extending easterly to near Markley Rd. South of Belvidere, Boone Co. Bids Feb. 14. CD 1/22.

▲ **WISCONSIN**—State Hy. Comn., State Office Bldg., Madison,
Wis.—**P. C. Kaiser Constr. Co.**, Portage, Wis., LB $175,705. Contract 1, grading, structures 4.735 mi. S. T. Hy. 60, Proj. S 0213 (1), Sauk Co.;
Wis.—**Lawrence Gerke**, Merrill, Wis., LB $500,853. Contract 1, grading ballast and structures 7.42 mi. S. T. Hy. 49, Proj. F 072-2 (4), Green Lake Co.;
Wis.—**N. M. Isabella, Inc.**, 714 Market Pl., Madison, Wis., LB $684,626. Contract 1, c. conc. and weighing station 4.893 mi. U. S. Hy. 18 and 151, Proj. F 017-2 (44) Dane Co.;
Wis.—cancelled bids to have been opened Feb. 19, Contract 1, base, b. conc. 0.246 mi. S. T. Hy. 145, Proj. U 027-1 (12), Milwaukee Co. Bids Feb. 19. CD 2/1.

WISCONSIN—State Hy. Comn., State Office Bldg., Madison,
Lawrence Gerke, Merrill, Wis. CA $500,853. Contract 1, grading, ballast, structure 7.42 mi. S.T. Hy. 49, Proj. F072-2 (4), Green Lake Co. Bids Feb. 19. CD 2/25, under LB.

MICHIGAN—State Hy. Dpt., Escanaba,
Mich.—**Caspian Constr. Co.**, Caspian, Mich. LB $532,310, est. $560,000 (9 bidders) 25 ft. aggregate base course 5.379 mi. M-20 from west of Trout Creek to Jumbo River, F 31021 C1-R (SP 31-55), etc., Ontonagon Co.;
Mich.—**A. Lindberg & Sons**, Ishpeming, Mich. LB $112,571, est. $130,000 (9 bidders) base course prime and double seal 3.392 mi. M-149 from Indian Lake northwest in Thompson and Ironwood Twps., M 75011 C1-R (SP 75-3), Schoolcraft Co.;
Mich.—**Payne & Dolan of Wisc.**, Rawson Ave., Milwaukee, Wis. LB $103,325, est. $150,000 (7 bidders) 22 ft. b. conc. 7.048 mi. US-2 from 1.693 mi. west of county line east to a point 5.355 mi. east of Iron-Gogebic Co. line, M 27024 C1-R (SP 27-20), etc., Iron and Gogebic Counties. Bids Feb. 13. CD 1/30.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,
Mich.—**Grand Paving Constr. Co.**, 235 Union Ave. S.E., Grand Rapids, Mich. LB $248,364, est. $200,000 (11 bidders) 22 ft. bit. aggregate surf. 12.8 mi. on parts of M-55 and M-65, M 35011 C1-R, M 35011 C2-U, Iosco and Ogemaw Counties;
Mich.—**Rieth-Riley Constr. Co.**, 837 Emmett St., Battle Creek, Mich. LB $268,235, est. $300,000 (17 bidders) 2 ft. base course, wid'n. left and right and 24 ft. b. conc. surf. 6.05 mi. US-27 from Clare-Roscommon Co. line south, M 18032 C1-RN (SP 18-17), Clare Co.; LB $405,356, est. $460,000 (13 bidders) 22 ft. b. conc. 13.79 mi. M-115 from US-10 to county line in Clare Co. and 5.8 mi. of 22 ft. b. conc. M-115 from M-66 to M-61, M 18011 C1-R (SP 18-20), Clare and Osceola Counties;
Mich.—**Wm. H. Gilliland Co.**, Alpena, Mich. LB $289,915, est. $290,000 (10 bidders) 25 ft. aggregate base course, prime and double seal 4.084 mi. M-65 from M-32 south to Spratt in Green Twp., M 04011 C1-R (SP 4-24), Alpena Co.;
Mich.—**Loselle Constr. Co.**, 1555 Goddard St., Wyandotte, Mich. LB $1,902,378, est. $2,070,000 (16 bidders) 24 ft. dual c. conc. and b. conc. base course, 4 bridges 2.374 mi. relocation US-23 from south of Beecher Rd. to north of Pasadena Ave., B1 23032C1-RO (1 07-2 18), etc., Genesee Co.;
Mich.—**Blue Water Excavating Co.**, Port Huron, Mich. LB $278,978, est. $280,000 (22 bidders) 25 ft. aggregate surf. 4.002 mi. M-38 from Washburn Rd. to Mertz Rd., M 79022 C1-R (SP 79-41), Tucola Co.;
Mich.—**Sugden & Sivier, Inc.**, 13100 Cloverdale St., Oak Park, Mich. LB $415,451, est. $510,000 (20 bidders) aggregate base course, prime and double seal surf. 5.667 mi. M-92 from north limits of Chelsea north to Territorial Rd., F 81011 C1-R (F 264 4), Washtenaw Co.;
Mich.—**Globe Constr. Co.**, Kalamazoo, Mich. LB $326,609, est. $330,000 (13 bidders) 22 ft. b. conc. 12.4 mi. M-55 from east Lake Rd. 1 mi. southeast of US-31 south and east to point 11 mi. west of Manistee, M 51021 C1-R (SP 517), Manistee Co. Bids Feb. 6. CD 1/30 and 1/17.

George S. Datema & Sons, 1560 Taylor St., Grand Rapids, Mich. LB $241,675. filtration plant, GRAND RAPIDS, MICH. City, M. Oakes, city mgr., Grand Rapids, Mich. J. & G. Daverman Co., 924 Grandville St., Grand Rapids, Mich., archts. CD 12/30/54.

▲† **Dunn Constr. Co.**, 2240 Tenth St., Port Huron, Mich. CA $1,114,214. operation bldg. addn., Port Austin Air Force Sstation, PORT AUSTIN, MICH. U. S. Eng., 600 E. Jefferson St., Detroit, Mich. Bids Feb. 8.

BUILDINGS—LB & CA

▲ **Frank Messer & Sons, Inc.**, 4612 Paddock St., Cincinnati, O., LB $1,407,000. 85-bed HOSPITAL addn., CINCINNATI, O. Bethesda Hospital, Oak and Windslow Av., Cincinnati, O. Bids Feb. 14. CD 12/27.

Frank Messer & Sons, Inc., 4612 Paddock St., Cincinnati, O., LB $763,700. (5 bidders) LABORATORY EXTENSIONS at Jewish Hospital, CINCINNATI, O. Jewish Hospital, Burnet Ave., Cincinnati, O. Bids Feb. 21. CD 2/18.

Freeman Constr. Co., R.D. 3, Wooster, O., CA $776,125, general contract LIBRARY alterations and addn. Kent State University, KENT, O. Ohio Dpt. P. Wks., 705 Ohio Dpts. Bldg., Columbus, O. Bids Jan. 28. CD 2/4, under LB.

▲ **Kuljian Corp.**, 1200 N. Broad St., Phila., Pa., CA Est. $1,000,000. BOILER HOUSE for new assembly plant, Brownhelm Twp., LORAIN, O. Ford Motor Co., The American Rd., Dearborn, Mich. Awarded Feb. 14. CD 7/16.

▲ **Westinghouse Electric Corp.**, 3 Gateway Center, Pittsburgh, Pa., CA $9,250,000. 2 turbine-generator units for STEAM POWER PLANT, STRATTON, O. Ohio Edison Co., 47 N. Main St., Akron, O. CD 2/4, under CA.

General Constr. Co., 301 Garfield St., Michigan City, Ind., CA $743,508. HIGH SCHOOL and GYMNASIUM addn. U. S. Rte. 30, DYER, IND. St. John Twp. School Holding Corp., Rt. 1, Dyer, Ind. CD 10/26.

Witter-Gaddis Corp., Box 261, Route 30, Shererville, Ind., CA $995,000. municipal GARAGE, 7 and Massachusetts St., GARY, IND. City, City Hall, Gary, Ind. Beine, Hall & Curran, 607 Broadway, Gary, Ind., archts. CD 2/20, under LB.

▲ **Market Square, Inc.**, c/o James R. Price, pres. National Homes Corp., Lafayette, Ind., Owner Builds. $3,000,000. 16-unit SHOPPING CENTER with 2,000 car parking area, northeast edge of city, LAFAYETTE, IND.

▲ **DeMichele Builders Co.**, 6113 W. Diversey Parkway, Chicago, Ill., Own Forces, $7,000,000. 400-HOMES, SHOPPING CENTER and SCHOOL, near DOWNERS GROVE, ILL. A. J. Del Bianco, 5501 Irving Park, Chicago, Ill., archt.

Knight Menard Co., 3301 N. Woodward St., Royal Oak, Mich. Owner Builds. $600,000. Beverly Hills Subdivision No. 12, 20 brick ranch HOMES, BIRMINGHAM, MICH.

▲ **Darin & Armstrong**, 2041 Fenkell Ave., Detroit 38, Mich. CA $1,198,000. Franklin Junior HIGH SCHOOL, Howe and Annapolis Sts., WAYNE, MICH. Bd. Educ., Wayne Community School Dist., 3714 S. Wayne Rd., Wayne, Mich. Bids Jan. 21. CD 1/2.

WEST OF MISSISSIPPI

Tex., Galveston—BA 3/19—The Galveston Wharves, c/o Supt. Maintenance & Constr., Material Yard, Galveston Wharves, Galveston, Tex., reconstruct Pier No. 14-E. $500,000-$1,000,000. R. L. Reid, 2506 Richton St., Houston, engr.

▲† **Arkansas**—BA 3/21—U. S. Eng., P. O. Box 60, Vicksburg, Miss., Canal 81, channel imprvt. Reach 1, Mile 9.7 to Mile 12.1 (Macon Lake) and Mile 0.0 to Mile 18.2 (Canal 81) incl. 3,000,000 cu. yd. excav., approx. 4.76 mi. channel clearing and snagging, approx. 220 cu. yd. filter sand, approx. 220 cu. yd. filter gravel, placing approx. 930 cu. yd. riprap stone, installing approx. 1,740 sq. ft. steel sheet piling furnishing, installing approx. 1,740 sq. ft. steel sheet piling and approx. 480 lin. ft. structural steel wales, Chicot and Desha Counties. CD 12/24/43.

† **N. D., Grand Forks**—HOUSING—BA 3/26—U. S. Eng., 1709 Jackson St., Omaha, Neb., officers' housing at Grand Forks Air Force Base, ENG-25-066-57-51. CD 6/21/56, under LB.

BUILDINGS—BA

Mo., House Springs—SCHOOL—BA 3/14—School Dist. R-1 of Jefferson Co., Richard Ross, Gruetzemacher, supt. Schools, House Springs, school bldgs., incl. Murphy and Maple Grove Elementary Schools, addns. to Cedar Hill, High Ridge and House Springs Schools. $500,000. Matthews & Hillman, 1318 St. Louis St., Springfield, archts. CD 1/3.

Mo., Fulton—DORMITORY—BA 3/19—Westminster College, Bd. Trustees, J. Layton Mauze, pres., two 2 story dormitory units, 1 story dining hall, kitchen, etc. $650,000. Plans deposit $50. Frederick C. Sternberg, 4 S. Central Ave., Clayton, Zone 5, archt. CD 12/10.

▲ **Mo., Kirkwood (St. Louis 22 P.O.)**—SCHOOL—BA 3/19—Kirkwood School Dist. R-7, Bd. Educ., Alva L. Crow, supt. Schools, 516 S. Kirkwood Rd., Zone 22, 1 story, rein.-con., brick, masonry Junior High School, Manchester Rd., west of Geyer Rd., incl. Little School bldg., admin. bldg., gymnasium. $1,000,000. Wm. B. Ittner, Inc., 911 Locust St., St. Louis, Zone 1, archt.-engr. CD 5/28.

Tex., Port Arthur—HOUSING—BA 3/19—Port Arthur Housing Auth., Port Arthur, 56 two story, brick veneer housing units. $460,000. Goleman & Rolfe, 203 Bowie Bldg., Beaumont, archts. Walter P. Moore, 2 Pinedale Blvd., Houston, B. Johnson & Assocs., 4926 Travis St., Houston, and George J. Schaumburg, 2678 Laurel St., Beaumont, engrs. CD 2/15.

Minn., St. Louis Park—HOSPITAL—BA 4/4—Asbury Methodist Hospital, 916 E. 15 St., Minneapolis, constr. mechanical, electrical and elevator work for new hospital. $750,000. Ellerbe & Co., E. 505 First

(Continued on page 122)

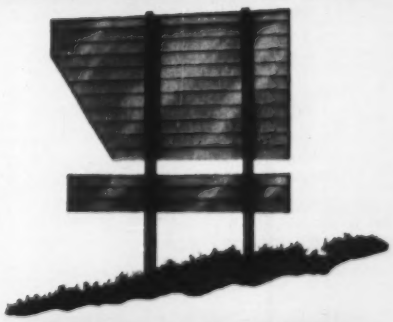
...in lighting standards, bridge railings and in extruded panels for

REYNOLDS ALUMINUM SUPERHIGHWAY SIGNS

In today's vast highway expansion, aluminum is featured increasingly because this strong, light, rustproof, corrosion-resistant metal means longer life without maintenance, lower handling and installation costs.

Latest development is Superhighway Signs made up of Extruded Aluminum Panels with Interlocking Joint Designs. This construction speeds sign erection, provides rigid strength to resist even hurricane winds without usual back bracing of large signs, and makes accident repairs quick by simple replacement of individual panels. Aluminum sign posts are strong and maintenance-free.

Reynolds also supplies standard Sign Blanks. Write for literature—especially for the booklet "Reynolds Aluminum Superhighway Signs".



Aluminum Bridge Railings will not rust or crack, never need painting. Write for Reynolds 52-page catalog.

Aluminum Chain Link Fencing stays strong and beautiful, resists rust without maintenance.

The Finest Products Made with Aluminum are made with REYNOLDS ALUMINUM

Reynolds Metals Company,
General Sales Office,
Louisville 1, Ky.

REYNOLDS ALUMINUM

See "CIRCUS BOY" Sundays, NBC-TV Network

(Continued from page 120)

National Bank., St. Paul, and McEnary & Krafft, McKnight Bldg., Minneapolis, archts. CD 12/15/54.

▲ **Minn., St. Louis Park**—HOSPITAL—BA 4/11—Asbury Methodist Hospital, V. Spry, supt., M. E. Nordstrom, chn. Hospital Bd., 916 E. 15 St., Minneapolis, (selected list bidders), 6 story, bsmnt. hospital, Excelsior Blvd., east of Minnehaha Creek. $5,500,000. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, and McEnary & Krafft, McKnight Bldg., Minneapolis, archts. CD 12/15/54.

BUILDINGS—SLC

Tex., Houston—AUDITORIUM, etc.—Rice Institute, S. Main St., soon lets contract Auditorium Lecture Hall. $500,000. H. E. Bovay Jr., 5009 Caroline St., and Walter P. Moore, 2 Pinedale St., engrs. Boit, Beranek & Newman, Inc., 16 Eliot St., Boston, Mass., acoustical engr. CD 11/16/55.

Tex., Houston—WAREHOUSE—J. Wein-Garten, Inc., 600 Lockwood St., soon lets contract, 130,000 sq. ft. concrete, steel warehouse, incl. 20,000 sq. ft. deep freeze. $750,000. Cowell & Neuhaus, 2303 LaBranch St., archts B. Johnson & Assocs., 4926 Travis St., and Walter B. Morris, c/o 4926 Travis St., engrs. CD 8/15.

▲ **Tex., Houston**—WAREHOUSE—J. Weingarten, Inc., 611 Lockwood St., soon lets contract warehouse for frozen foods and drugs. $1,000,000. Cowell & Neuhaus, 5619 Fannin Bldg., archts. B. Johnson & Assocs., 4926 Travis Bldg., and Walter P. Moore, 2 Pinedale St., consult. engrs. CD 2/25.

HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

O. W. Swanson Constr. Co., 550 Snelling Ave. S., St. Paul, Minn. CA **$662,868**. c. conc. 10.2 mi. between Madison and Bellingham, Lac qui Parle Co. CD 1/29, under LB.

† **F. W. Forst Constr. Co.**, WOW Bldg., Omaha, Neb. LB **$477,489**. Sch. A; levees and channel alterations Unit 1, Section LI-A, Little Sioux River near Onawa, Inv. 25-066-57-54, IOWA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bid Feb. 19. CD 1/16; **Cooper Constr. Co.**, Fort Dodge, Iowa. LB **$169,977** Sch. B; LB **$174,618** Sch. C. (Iowa).

▲ **MISSOURI**—State Hy. Dpt., Jefferson City,

Mo.—**Maxwell Bridge Co., Inc.**, Columbus, Kan. LB **$965,673**. (4 bidders) concrete deck and aluminum handrail 0.773 mi., St. Charles and St. Louis Counties;

Mo.—**Frank Trager Contr.**, Chillicothe, Mo. LB **$79,714**. (8 bidders) two 70 ft. I-beam spans one 120 ft. steel truss span Sta. 42 plus 53, Livinston Co. Bids Feb. 15. CD 1/29.

▲ **MISSOURI**—State Hy. Dpt., Jefferson City,

Mo.—**Knutson Gould Constr. Co.**, 3527 Broadway, Kansas City, Mo. LB **$119,521**. (6 bidders) 24 ft. c. conc. 0.716 mi. Macon Co.;

Mo.—**W. J. Menefee Constr. Co.**, 419 W. Main St., Sedalia, Mo. LB **$79,060**. (12 bidders) 24 ft. C conc. 0.404 mi. Calloway Co.; LB **$791,964**. (12 bidders) c. conc. 24 ft., 4.531 mi. Calloway Co.;

Mo.—**Atkinson Windle Co.**, Chillicothe, Mo. LB **$1,153,234**. (5 bidders) 24 ft. b. conc. 24 ft. c. conc. on part 15.399 mi. Shelby Co.;

Mo.—**Burk Constr. Co.**, Rte. 9 Box 611, Springfield, Mo. LB **$94,193**. (7 bidders) grav. or crushed stone surf. 3.988 mi. McDonald Co. LB **$90,481**. (6 bidders) chat. grav. or crushed stone surf. 7.297 mi. Dade Co. Bids Feb. 15. CD 1/29.

▲ **NORTH DAKOTA and MINNESOTA**—State Hy. Dpt., Bismarck, N. D., and State Hy. Dpt., 1246 University Ave., St. Paul, Minn.,

W. D. Giertsen Co., 900 Glenwood Ave., Minneapolis, Minn. LB **$1,676,244**. (8 bidders.) constr. interstate bridge proj., twin bridges Nos. 9066 and 9067 over Red River of the north between Fargo, N. D. and Moorhead, Minn., Proj. No. 1-01-B (1), Fed. Aid. Bids Feb. 15. CD 3/6/56.

▲† **Halvorson Constr. Co.**, Yardley, Wash. CA **$1,436,031**. Schedule 1, buildings and utilities, Phase II, Minot Air Force Base, ENG-25-066-57-7, MINOT, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 1/30, under LB.

† **Sweetman Constr. Co.**, 100 S. Dakota St., Sioux Falls, S. D. CA **$545,816**. levees and channel alterations, Sec. 11, Big Sioux River, Inv. 25-066-57-49, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Jan. 31. CD 2/11, under LB.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Okla.—**Smith Bros.**, Noble, Okla., CA **$165,187** stab. agreg. base, rock asph. surf. 6.339 mi. Hy. 70-E, Roberta, Bryan Co.; CA **$110,355** stab. aggreg. base, rock asph. surf. 4.15 mi. Hy. 70-E, Roberta, Bryan Co.; CA **$83,703** grading, draining 7.247 mi. Hy. 70-E, Albany, Bryan Co.; CA **$247,071**. stab. aggreg. base with bit. surf. 6.746 mi. Hy. 2, Wilburton, Latimer Co.;

Okla.—**Simms Constr. Co.**, Duncan, Okla., CA **$100,396** grading, draining 1.504 mi. U.S. 281, Anadarko, Caddo Co.;

Okla.—**Amis Constr. Co.**, 1647 Exchange St., Oklahoma City 8, Okla., CA **$360,443**. grading, draining 3.237 mi. Hy. US 66, Tulsa, Tulsa Co.; CA **$721,328** grading, draining 3.248 mi. US 66, Tulsa, Tulsa Co.;

Okla.—**W. H. Blackburn**, 2636 N.W. 24 St., Oklahoma City 11, Okla., CA **$154,736**, grading, draining 5.344 mi. U.S. 59, Stapp, Leflore Co.; CA **$199,495**. grading, draining 4.822 mi. U.S. 59, Stapp, Leflore Co.;

Okla.—**Lyles & Buckner**, Surety Bldg., Muskogee, Okla., CA **$394,648**. c. conc. 5.004 mi. U.S. 266 Oktaha, McIntosh Co.;

Okla.—**W. E. Logan & Sons**, Barnes Bldg., Muskogee, Okla. CA **$381,866**, grading, draining 5.633 mi. Hy. 103, Octavia, Leflore Co.;

Okla.—**Sawilisch Constr. Co.**, El Reno, Okla., CA **$192,526**. grading, draining, U.S. 66 Sayre, Beckham Co. Bids Feb. 19, awarded Feb. 20. Grand total $3,111,754. CD 2/8.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Okla.—**Simms Constr. Co.**, Duncan, Okla., LB **$467,779** grading, draining 6.716 mi. U.S. 77, Goldsby, McClain Co.;

Okla.—**Clarence Keck**, Fairview, Okla., LB **$199,171** grading, draining 6.924 mi. Hy. 15, Orienta, Major Co.;

Okla.—**Steinberg-Boyd Co.**, 1514 S. 79 Ave., Tulsa, Okla., LB **$197,877**, stab. asph. base, bit. surf. 6.456 mi. Hy. 11, Wakita, Grant Co.;

Okla.—**H. D. Youngman**, Baxter Springs, Kan., LB **$208,646**. asph. stab. base with bit. surf. 6.059 mi. Hy. 33, Hammon, Custer Co.;

Okla.—**Quapaw Constr. Co.**, Quapah, Okla., LB **$375,895** stab. aggreg. base, b. conc. 2.787 mi. U.S. 75 Okmulgee, Okmulgee Co.;

Okla.—**Ryan & Phelps**, 760 N. Western St., Oklahoma City 18, Okla., LB **$379,868**. soil cement base, b. conc. 5.03 mi. U.S. 66, Sayre, Beckham Co. Bids Feb. 19. CD 2/8.

Brodie & Enix, Box 2064, Amarillo, Tex. LB **$228,890**, est. $100,000. 43,000 lin. ft. 12- to 16-mi. water lines, clear water well, BURKBURNETT, TEX. City, Burkburnett, Tex. Bids Feb. 5. CD 1/31.

Uvalde Constr. Co., Hi-Line Dr. and N. Industrial St. LB **$410,872**. imprv. Garland Rd., Buckner Blvd. to Winsted Dr., DALLAS, TEX. City, City Hall, Dallas, Tex. CD 2/16.

† **Technical Constructors, Inc.**, Box 2488, Dallas, Tex. LB **$141,593**. test cells for turbo engines control room addn. and modification, some room expansion, Inv. 41-608-57-212, KELLY AIR FORCE BASE, TEX. U. S. Govt., c/o Contractors Relations Office, Kelly Air Force Base, San Antonio, Tex. Bids Feb. 8. CD 1/29.

▲† **J. M. Dellinger, Inc.**, Box 4227, Corpus Christi, Tex., LB **$1,787,000**, est. over $500,000. crosswind runway and taxiway incl. 118,172 sq yd. cement concrete pavement, Naval Auxiliary Landing Field, NBy 1168, Spec. 1168/56, ALICE ORANGE GROVE, TEX. Officer in Charge of Constr., Admin. Bldg. No. 1, Naval Air Station, Corpus Christi, Tex. CD 1/30.

▲ **NEW MEXICO**—State Hy. Dpt., State Hy. Bldg., Cerrillos Rd., Santa Fe,

N. M.—**O. D. Cowart**, 523 Amherst Dr. S.E., Albuquerque, N. M. CA **$1,213,019**, est. $1,618,577. Valencia-Bernalillo Co. line-east, Proj. I 093-3 (5), Bernalillo Co.;

N. M.—**Jack Adams**, P.O. Box 4098, Coronado Station, Santa Fe, N. M. CA **$559,587**, est. $665,368. Portales-Urban, Proj. F 025-1 (2), Roosevelt Co.;

N. M.—**Skousen Constr. Co.**, 208 Springer Bldg., Albuquerque, N. M. CA **$571,386**, est. $676,468. Jct. US-66-San Mateo and Jct. SR-53, Ambrosia Lake, Proj. Nos. A-AA-S-12 (1) and A-AA-10 (1), Valencia and McKinley Counties. Grand total $2,253,992. Bids Feb. 21. CD 2/14.

▲† **Allen M. Campbell, Tyler, Tex.** LB **$1,475,816**. missile assembly bldg., Holloman Air Force Base, ENG-57-44, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Feb. 15. CD 1/11.

† **P. R. Burns Constr. Co.**, P.O. Box 1111, Las Cruces, N. M. LB **$508,159**. addnl. missile launching facilities, White Sands Proving Ground, ENG-29-005-57-2, LAS CRUCES, N. M. U. S. Eng., P.O. Box 1538, Albuquerque, N. M. Bids Feb. 12. CD 1/11.

HEAVY CONSTRUCTION—LB & CA

St. Casimir's Parish, 934 Geranium Ave. E., St. Paul, Minn., rejected bids Jan. 17, SCHOOL and CONVENT, Jessamine Ave. and Forest St., ST. PAUL, MINN. LB **$405,885**. CD 1/23, under CA.

J. E. Dunn Constr. Co., 929 Holmes St., Kansas City Mo. CA Est. **$500,000**. 3 story, brick CLUB, parking area, 2503-33 Gillham Rd., KANSAS CITY, MO. Automobile Club of Missouri, Lou Holland, chn. Bldg. Comn., 3239 Broadway, Kansas City, Mo. Gentry & Voskamp, 4 W. 13 St., Kansas City, Mo., archts.

▲ **Metropolitan Constr. Co.**, 6000 E. 60 St., Kansas City Mo. CA Est. **$1,180,000**. Doctors OFFICE bldg., 42,000 sq. ft. on 3 levels over enclosed parking area, East at Southwest 63 and Rockhill Rds., KANSAS CITY, MO. Staff Inv. Corp., c/o McLain & Sidorowicz, archts. 721 Minnesota Ave., Kansas City, Kan.

▲† **Sharp Bros. Constr. Co.**, 1014 E. 19 St., Kansas City, Mo. LB **$1,999,855**, est. $2,038,335 (13 bidders) MANUFACTURING SUPPORT BLDG., LIGHT MFG. BLDG. and support facilities, 82,160 sq. ft. mfg. area, 20 ft. clear height, 26,400 sq. ft., 11 ft. height office area for Bendix Aviation Corp., 95 and Troost Sts., KANSAS CITY, MO. Atomic Energy Comn., P.O. Box 5400, Albuquerque, N. M. Bids Feb. 19. CD 2/6.

▲† **Wilson Constr. Co.**, 535 J St., Lincoln, Neb. LB **$1,825,210**. (8 bidders) TM-177, incl. 8 masonry bldgs., Inv. 25-066-57-22, DICKINSON, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Feb. 14. CD 11/15/56, under LB.

▲† **T. C. Bateson Constr. Co.**, 6800 Denton Dr., Dallas, Tex., CA **$1,043,880** (8 bidders) entrance bldg. to house engineering and administrative personnel and resident naval staff, maintenance shop for welding, machine shop, electrical and instrument servicing facilities and warehouse, railroad siding, site grading for Navy Fuel, MUSKOGEE, OKLA. Callery Chemical Co., K. W. Comsey, constr. mgr., Callery, Pa. will operate for Bureau Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash. 25, D. C. Bids Feb 15. CD 2/25, under LB.

Spartan Constr. Co., Box 14397, Houston, Tex., LB **$355,296**, est. $350,000. Lee COLLEGE CLASSROOM and CAFETERIA, BAYTOWN, TEX. Goose Creek Ind. School Dist., Baytown, Tex. Bids Feb. 11. CD 2/8.

S. R. Duncan, 3706 Ave. Q, Lubbock, Tex., LB **$622,000**. Base Bid. HIGH SCHOOL, LUBBOCK, TEX. Lubbock Independent School Dist., Lubbock, Tex. Herbert Brasher & Assocs., 2118-34th St., Lubbock, Tex., engrs CD 2/4.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **California**—BA 3/19—U. S. Eng., 751 S. Figueroa St., Los Angeles, imprv. Los Angeles River from Owens mouth to Corbin Aves., CIVENG-04-353-57-30. $4,000,000. Extended date. CD 2/13.

▲† **Calif., Beale Air Force Base**—RUNWAY, etc—BA 3/21—U. S. Eng., 1209 8th St., Sacramento, runway primary (concrete) and related facilities at Beale Air Force Base, near Marysville, to convert it into Strategic Air Command heavy bomber base, ENG-04-167-57-42. $12,000,000-$14,000,000. CD 11/16.

† **Idaho**—BA 4/9—Bureau Reclamtion, Dpt. Interior, Hayden Lake Corners, Hayden Lake, Idaho, Hayden Lake Pumping Plant, elevated steel tank and distr. sys., Rathdrum Prairie Proj. near Coeur d'Alene, Spec. DC 4864; adv. ENR 3/7.

† **Arizona and Nevada**—BA 4/11—Bureau Reclamation, Dpt. Interior, Kanab, Utah, furnishing, erecting one 150,000 gal., elevated steel water tank and one 3 m.g. steel storage reservoir for Glen Canyon Community facilities, Colorado River Storage Proj. near Lee's Ferry, Spec. DC 4865; adv. ENR 3/7. CD 9/7.

BUILDINGS—BA

Wash., Redmond—SCHOOL—BA 3/14—Lake Washington School Dist. 414, Kirkland, 3 masonry, steel frame, 48,000 sq. ft. Junior High School buildings. $720,000. Mallis & DeHart, Lyon Bldg., Seattle, Zone 4, archts. CD 12/19/55.

▲ **Ore., Salem** — SCHOOLS — BA 3/22 — Salem School Dist., 1309 Ferry St., Waldo and Judson Junior High Schools. $2,500,000. Plans deposit $85. Extended date. Wm. I. Williams, 1390 N. Capitol St., archt CD 2/15.

Calif., San Jose — CAFETERIA — BA 3/26 — State Div. Architecture, Pub. Wks. Bldg., 1120 N. St., Sacramento, 30,700 sq. ft. college cafeteria, rein.-con. foundation, structural steel roof beams. $765,500. Plans deposit $25. Anson Boyd, Pub. Wks. Bldg., Sacramento, archt.

▲ **Calif., Fresno**—HOSPITAL—BA 3/28—Fresno Community Hospital, 1234 "S" St., 4 story, bsmnt., 128,000 sq. ft., 243-bed steel, concrete hospital addn., incl. ob. ward kitchen, nursery, etc. $3,800,000. Extended date. Alastair Simpson, 64 N. Fulton St., archt. CD 1/23.

▲ **Utah, Salt Lake City**—SCHOOL—BA 4/2—Granite Dist., 3212 South State St., Granger High School, 3600 S. 3600 W. St. $1,600,000. Lorenzo S. Young, 826 Continental Bank Bldg., archt. CD 12/15/55.

▲ **Calif., Los Angeles**—SCIENCE—BA 4/3— State Div. Architecture, 1100 S. Grand Ave., 3 story 125,000 sq. ft. Science Bldg., at Los Angeles State College of Applied Arts & Sciences, San Bernardino Freeway campus. $2,950,000. Plans deposit $50. CD 1/31.

▲ **Calif., Fresno**—LIBRARY—BA 4/16—Fresno Co., Court House, 2 story, 81,000 sq. ft. brick, rein.-con. library. $1,500,000. Swartz & Hyberg, Rowell Bldg., archts. CD 3/23.

HEAVY CONSTRUCTION—LB & CA

▲ **UTAH**—State Road Comn., State Capitol, Salt Lake City,

Utah—**L. A. Young Constr.**, Richfield and **Vernal Sand & Gravel**, Vernal, Utah, CA **$711,901**. plant mix 8.47 mi. and 1 concrete bridge FA Proj. F-015-2 (1), Duchesne Co.;

Utah—**Germer, Abbott & Waldron Constr.**, Tremonton, Utah, CA **$555,159**, road mix bit. surf. 8.5 mi. F. A. Rte. 35, F. L.P. (20) and S.P. 15-1585. Kane Co.;

Utah—**James Reed Constr.**, Lark, Utah, CA **$763,146** plant mix bit. surf. 7.493 mi. 2 concrete bridges F.A. Proj. F-013-2 (2), Grand Co. Grand total $2,030,206. Bids Jan. 29. CD 2/5, under LB.

UTAH—State Road Comn., State Capitol, Salt Lake City,

W. W. Clyde & Co., Springville, Utah, LB **$612,336**. concrete steel overpass 0.154 mi. F.A. Proj. IG-01-7 (1), Salt Lake Co. Bids Feb. 19. CD 2/14.

▲ **UTAH**—State Road Comn., State Capitol, Salt Lake City,

Utah—**Fisher Constr. Co.**, 2201 S. 19 Ave., Phoenix, Ariz., LB **$783,796**, est. $559,150 road mix bit. surf. 21.175 mi. F.A. Proj. A-AA 47 (1), San Juan Co.;

Utah—**W. W. Clyde & Co.**, Springville, Utah, LB **$350,065**, est. $350,000, road mix 2.914 mi. and concrete bridge F.L.H. 1 (2) and L.L.H. 15 (2) Grand Co.;

Utah—**L. A. Young Constr.**, Richfield, Utah, LB **$312,965**. road bit. surf. 0.786 mi. concrete bridge F.A. Proj. S 0412 (1) Washington Co. Bids Feb. 19. CD 2/11 and 2/6.

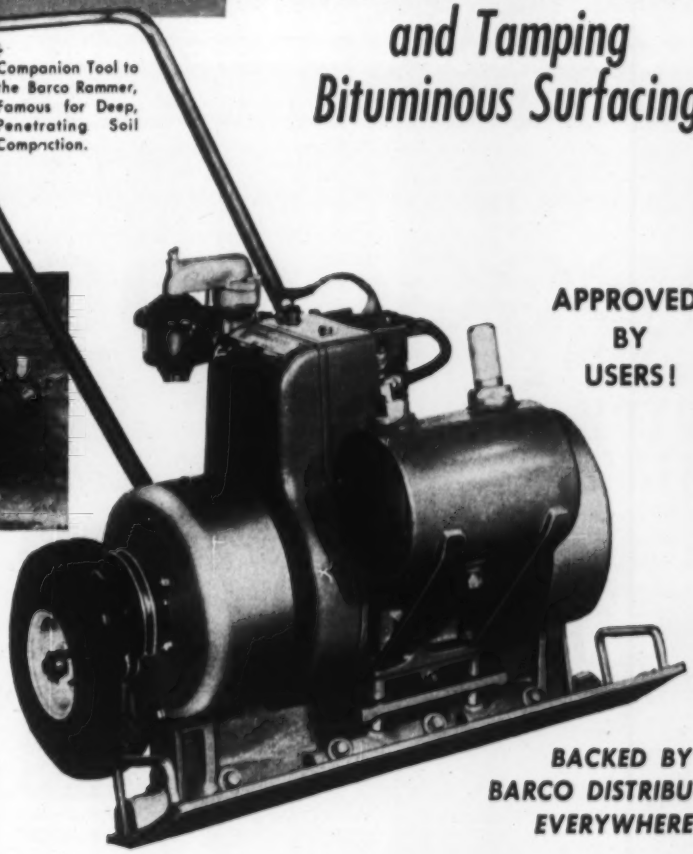
ARIZONA—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix,

Western Constructors Inc., P. O. Box 1604, Phoenix, Ariz., LB **$255,898** (17 bidders) select material, aggreg. base, bit. road mix, seal coating 3.7 mi. Willcox-Chiricahua National Monument Hy. S-273 (3), Cochise Co. Bids Feb. 15. CD 2/7.

(Continued on page 124)

THE NEW BARCO VIBRA-TAMP*

For Vibratory Compaction of Granular Base Materials and Tamping Bituminous Surfacing



* Companion Tool to the Barco Rammer, Famous for Deep, Penetrating Soil Compaction.

APPROVED BY USERS!

BACKED BY BARCO DISTRIBUTORS EVERYWHERE!

EFFICIENT— one man does the work of many with VIBRA-TAMP. Operates in any weather. Works flush against curbs, foundations, and walls.

ECONOMICAL— to buy, operate, and maintain! Saves your bigger, costlier equipment. Tamps up to 750 sq. yds. per hour.

SAFE— moving parts fully enclosed. Simple controls.

DURABLE— simple design and quality construction keep VIBRA-TAMP on the job day in and day out.

The new Barco VIBRA-TAMP is a proven tool — superior in design and performance — backed by leading equipment distributors representing Barco in all parts of the country. Users report VIBRA-TAMP a big work-saver wherever low cost is a prime consideration. Take VIBRA-TAMP on the big jobs for hard-to-reach areas. Excellent for patching streets, driveways, and roads. VIBRA-TAMP has no economy equal — a real work-horse on sand, gravel, soil, chippings!

Ask for new catalog No. 514D.

FOUNDED 1908

BARCO MANUFACTURING CO. 514D North Hough St., Barrington, Ill.

BARCO PRODUCTS BACKED BY EXPERIENCE

BARCO RAMMER
for High Degree Soil Compaction

BARCO VIBRA-TAMP
for Granular Fill and Bituminous Surfacing

(Continued from page 122)

▲ **NEVADA**—Directors Hys., State Office Bldg., Carson City,
Wells-Stewart Constr. Co., Inc., Message Center, Las Vegas, Nev. CA **$1,075,792** (6 bidders) constr. portion of State Hy. System from North Las Vegas to 5.5 mi. northeasterly, Rte. Sec. 005-2, Control Sections CL-04 and 05, Proj. F 005-2 (7), State Hy. Contr. No. 983, Clark Co. Bids Feb. 14. CD 1/30.

▲† **Wells Stewart**, 2133 Industrial Rd., Las Vegas, Nev. LB **$1,192,820**. Mathews Canyon Dam and Pine Canyon Dam Meadow Valley Wash Basin, CIVENG-**04-353-57-28, NEVADA. U. S. Eng.**, 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 20. CD 1/31.

▲† **Frank Capriotti**, 1725 E. Second St., Reno, Nev. LB **$1,913,788** est. $2,077,508. (6 bidders) dining hall, heating plant, airmen's dormitories, officers' quarters, paving and utilities, Stead Air Force Base, ENG-04-167-57-37, RENO, NEV. U. S. Eng., 1209 Eighth St., Sacramento, Calif. Bids Feb. 21. CD 2/19.

WASHINGTON—State Hy. Comn., Olympia, Wash.—**Lake City Gravel & Materials Co.**, 10728 Bothell Way, Seattle 55, Wash., CA **$102,026** (7 bidders) clearing, draining, grading, crushed stone surf. 1.642 mi. FAS S-1208 (1), Lewis Co.;
Wash.—**Northwest Constr. Co.**, 3950 6 Ave. N. W. Seattle, Wash., CA **$828,246** (8 bidders) clearing, draining, grading, rein.-con. box girder bridge 4.2 mi. Primary State Hy. 2, King Co. Bids Feb. 19, awarded Feb. 20. CD 2/5.

WASHINGTON—State Hy. Comn., Olympia,
J. E. Alexander, 7355 18 Ave. N.E., Seattle 15, Wash. LB **$119,965** (5 bidders) rein.-con. girder bridge for Martin Way overcrossing 0.052 mi. Primary State Hy. 1, FAP I-001-2 (47) Thurston Co. Bids Feb 19. CD 2/5.

▲ **Sound Constr. & Eng. Co.**, 1300 Aloha St., Seattle, Wash., CA **$5,477,532**, two-place painting-facility hangar except for structural steel frame with concrete apron and yard paving, access road, utilities, etc. MOSES LAKE, WASH. Boeing Airplane Co., 7755 E. Marginal Way, Seattle 4, Wash. Bids Jan. 15. CD 1/22 under LB.

C. E. Prescott, 3516 Airport Way, Seattle, Wash., LB **$60,172** (3 bidders) chlorinating works at 5 reservoirs and 1 pumping station, SEATTLE, WASH. City, County-Civic Bldg., Seattle 4, Wash. Bids Feb. 20. CD 2/11.

▲† **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho, LB **$2,348,991** (4 bidders) reconstr. and exten. of runway and exten. alert taxiway. Geiger Air Force Base, Inv. 57-101, SPOKANE, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Feb. 21. CD 2/6.

▲ **Lord Brothers**, 9233 N. Calvert Ave., Portland, Ore. LB **$3,336,747**. (6 bidders.) 100,000 lin. ft. 42- to 54-in. water line, SALEM, ORE. City, City Hall, Salem, Ore. Bids Feb. 21. CD 1/29.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,
Gallagher & Burk, Inc., 344 High St., Oakland, Calif., CA **$1,132,117**. grading, surfacing 1.4 mi. Mountain Blvd., in Oakland between Park Blvd. and 0.6 mi. south of Lincoln Ave., constr. Sequoia Lodge pedestrian undercrossing and 7 retaining walls, Alameda Co. CD 2/1 under LB.

† **Pacific Co. Engineers & Builders**, 801 Cedar St., Berkeley, Calif., LB **$449,338**, est. $479,270 (10 bidders) cantonement and control areas NIKE T33 Denverton Travis Air Force Base, Defense Area at Travis Air Force Base, ENG-04-167-57-32, CALIFORNIA. U. S. Eng., 1209 8th St., Sacramento, Calif CD 1/16.

David Biggar, 100 Oak St., Bakersfield, Calif. CA **$107,106**, est. $100,000. (7 bidders.) swimming pool, LAMONT, CALIF. Bear Mountain Recreation Park Dist., Arvin, Calif. Whitney Biggs, 3601 Stockdale Hy., Bakersfield, Calif., archt. Bids Feb. 5. CD 8/21.

Manuel Marques, Jr., 1735-85th Ave., Oakland. LB **$114,926**. (12 bidders.) sewer trunk line at South Modesto Industrial Tract, MODESTO, CALIF. City, City Hall, Modesto, Calif. CD 4/27.

Swinerton & Walberg, 200 Bush St., San Frncisco, Calif. LB **$166,419**. (5 bidders.) modification of deflector cooling piping and constr. propellant system addns. at 1st and 2nd Sts., NIMBUS, CALIF. Aerojet-General Corp., 410 N. Citrus Ave., Covina, Calif.

† **Bingham Constr. Co.**, 6329 Elvas Ave., Sacramento, Calif. LB **$130,972**, est. $150,468. (6 bidders.) constr. Communications Bldg. and Cold Storage Warehouse modifications, Mather Air Force Base, ENG-04-167-57-34, SACRAMENTO, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. CD 2/13.

Standard Electric Co., 1061 University Ave., San Diego, Calif. LB **$88,886**. street lighting in India, Columbia, State and Union Sts., etc., Doc. 546092, SAN DIEGO, CALIF. City Council, 1600 Pacific Hy., San Diego, Calif. Bids Feb. 1. CD 12/20/45.

▲† **Morrison-Knudsen Co.**, 319 Broadway, Boise, Idaho, and **Stolte Constr. Co.**, 8451 San Leandro St., Oakland, Calif., CA **$5,428,000**. sewage disposal facilities plant, Naval Ammunition Depot, Mare Island Naval Shipyard, NBy-91703, Spec. 50115, VALLEJO, CALIF. Dist. P. Wks. Office, Dpt. Navy, 12th Naval Dist., San Bruno, Calif. Bids Jan. 16. (Correction—names of contractors). CD 2/1, under CA.

BUILDINGS—LB & CA

Howard Constr. Co., 3775 South 11 St., East, Salt Lake City, Utah, CA **$840,500**. JUNIOR HIGH SCHOOL, Kearns, SALT LAKE CITY, UTAH. Granite School Dist., 3212 South State St., Salt Lake City, Utah. Bids Jan. 15. CD 1/23, under LB.

T.G.K. Constr. Co., Inc., 2750 W. McDowell Rd., Phoenix, Ariz., LB **$255,500**. 87x154 ft., rein.-con., steel LABORATORY BLDG. for State Hy. Dpt., 18 Ave. and Madison St., PHOENIX, ARIZ. State Hy. Dpt., 17 Ave. and Jackson St., Phoenix, Ariz.

† **Lembke, Clough & King, Inc.**, 107 W. Wyoming Ave., Las Vegas, Nev. LB **$214,023**. constr. 3 AEC TEST DOMES 50 ft. diam., rein. con, inv. 292-57-38, Nevada Test Site, MERCURY, NEV. Atomic Energy Comn., 1235 S. Main St., Las Vegas, Neb. Bids Feb. 19. CD 2/1.

▲† **Kuney-Johnson Co.**, 1266 Mercer St., Seattle, Wash. LB **$1,424,813**. (8 bidders.) 2 story PERSONNEL BLDG., 1 story SPECIAL SERVICE BLDG., 1 story BACHELOR OFFICERS QUARTERS, and other BUILDINGS, Spec. 6594/56, PACIFIC BEACH, WASH. P. Wks. Office, 13th Naval Dist., U. S. Naval Station, Seattle, Wash. Bids Feb. 21. CD 2/4.

G. E. Teufel Co., White-Henry Bldg., Seattle, Wash., CA **$693,600**, general contract Sunset JUNIOR HIGH SCHOOL, SEATTLE, WASH. Highline School Dist. 401, Seattle, Wash. CD 1/1 under LB.

Standard Constr. Co., 315 E. 25 St., Tacoma, Wash. LB **$544,178**. (2 bidders.) general contract H. F. Hunt JUNIOR HIGH SCHOOL, TACOMA, WASH. School Dist. No. 10, S. 8 and Tacoma Sts., Tacoma, Wash. Bids Feb. 18. CD 2/6.

Robert L. Wilson, 850-29th St., Oakland, Calif. CA **$692,600**. 5 story, rein-con. self-parking ramp type GARAGE, BERKELEY, CALIF. City, City Hall, Berkeley, Calif. Hedman, Ferguson & Carroll, 2168 Shattuck St., Berkeley, Calif., engrs. CD 2/21, under LB.

Larsen-Ratto Constr. Co., 1901 Hedges Ave., Fresno, Calif., CA **$541,736**. Bishop Union HIGH SCHOOL Addn., BISHOP, CALIF. Bishop Union High School Dist., c/o Supt., 301 N. Fowler St., Bishop, Calif. Smith, Powell & Morgridge, 208 W. 8th St., Los Angeles, Calif., archts. CD 2/5.

▲ **B&R Constr. Co.**, 110 Market St., San Francisco, Calif. LB **$1,421,000**. rein.-con., structural steel HIGH SCHOOL, CRESCENT CITY, CALIF. Del Norte Co. High School Dist., c/o Supt., Crescent City, Calif. Freeman, Hayslip, Tuft & Hewlett, 2040 S. W. Third St., Portland, Ore., archts.

▲ **Campbell Constr. Co. & Erickson Constr. Co.**, 800 R St., Sacramento, Calif., LB **$1,314,964**. (5 bidders) 1 story, tilt up concrete, wood frame ADMINISTRATION BLDG., SCIENCE MATHEMATICS, ENGINEERING bldg. and LIBERAL ARTS bldg., DEL PASO HEIGHTS, CALIF. American River Junior College Dist., 1333 Grand Ave., Del Paso Heights, Calif. Barovetto & Thomas, 718 Alhambra Blvd., Sacramento, Calif. archts. CD 1/23.

Nylin P. Hurd Constr. Co., 1317 Santiago Ave., Santa Ana, Calif. CA **$901,565**. Yorba JUNIOR HIGH SCHOOL, Proj. No. 1, 18 classrooms, ORANGE, CALIF. Orange

(Continued on page 127)

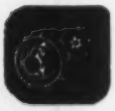
ROCKFORD

MULTIPLE CLUTCH SPRINGS

Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc



Heavy Duty Over Center

Power Take-Offs

Speed Reducers

ASSURE EVEN PRESSURE

As many as 24 best quality springs are used in ROCKFORD Spring-Loaded CLUTCHES—to assure even pressure all around the plate. Made of heat-resistant wire (that will not take a "set") the springs provide long service life in today's high-speed engine driven vehicles.

SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER

313 Catherine St., Rockford, Ill., U.S.A.

Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

Robert Groff, owner of Northridge Equipment Rentals, California, takes delivery of his 18th Le Roi Compressor, model 85.

"Here's How I Make Money on Compressor Rentals"

LeRoi Compressors give top performance, require little maintenance, bring maximum profits from satisfied customers.

New units rented out minutes after delivery.

"If I have to make two service calls a month on a rental compressor, I lose the profit on that month's use," says Robert Groff, owner of Northridge Equipment Rentals, Northridge, California.

"That's why I always choose Le Roi and now own eighteen," says Groff. "They run day after day with little care, attention, or upkeep."

Dependability and performance are the cornerstones of Groff's successful business. His customers expect trouble-free equipment, economical in operation, and Groff sees that they get it! No company, he says, can hope to succeed in a rental business if they put their money into inferior equipment.

So much in demand are Le Roi Compressors that the eighteenth unit, shown above, was rented out minutes after delivery.

The Le Roi Air Compressor units rented out by Groff have a capacity of 85 cfm. They're ideal where portability is important . . . they trail well behind vehicles, and are balanced so that one man can easily position them on the job-site.

They're easy to operate, too. One control — the starter button — gives you 85 feet of air at 100 pounds pressure. That's more than ample for powering a heavy breaker. They are a perfect power source for Le Roi Newmatic Air Tools.

There's a big, lockable tool box on each unit — weathertight, and large enough to hold air tools, hose, and accessories.

Other Le Roi Compressors range in capacity from 105 to 600 cfm. All of them feature Le Roi's integral packages — proved air sources with power matched to the compressor by a manufacturer who knows both engines *and* air.

The qualities that make Le Roi air compressors money-makers in rental service are the same qualities that make them the favorite of owners, everywhere.

Whether you rent or buy, Le Roi's can be counted on for dependable, trouble-free operation.

PC-71

LE ROI Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Cleveland air tools, Tractair, portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.

YOUNGSTOWN "BUCKEYE" CONDUIT

. . . *Provides Lifetime Wiring Protection For Frank Lloyd Wright's Modernistic Price Tower*

At Bartlesville, Okla., the H. C. Price Co.—veteran oil and gas pipeline construction firm — recently opened their beautiful, new cantilever-design Price Tower. Containing both offices and residential apartments, this 19-story, fully air-conditioned structure uses Youngstown "Buckeye" full-weight rigid steel conduit for protection of its important electrical wiring system from damaging elements such as water, moisture, vapor, dirt and dust.

Field reports across-the-nation state: "Youngstown's 'Buckeye' Conduit is easier to bend—easier to fish wires through and, due to its superior corrosion resistance, affords a much longer trouble-free service life."

Leading distributors in every industrial and electrical market are ready to serve you quickly and efficiently from their ample stocks of Youngstown "Buckeye" Conduit. They're as near as your phone—why not call today?

QUALITY YOUNGSTOWN SERVICE

Price Tower, Bartlesville, Okla.
Owner: H. C. Price Co.
Architect: Frank Lloyd Wright
General Contractor: Culwell Construction Co., Oklahoma City, Okla.
Electrical Contractor: Industrial Electric Co., Oklahoma City, Okla.
Conduit Supplier: Westinghouse Electric Supply Co., Oklahoma City, Okla.

Standard threaded rigid steel conduit is the only wiring system approved today by the National Electrical Code as moisture-, vapor-, dust- and explosion-proof for use in hazardous locations and occupancies.

THE YOUNGSTOWN SHEET AND TUBE COMPANY
Manufacturers of Carbon, Alloy and Yoloy Steel
General Offices - Youngstown 1, Ohio
District Sales Offices in Principal Cities

(Continued on page 124)

Unified School Dist., 525 N. Shaffer St., Orange, Calif. Smith, Powell & Mordridge, 208 W. 8th St., Los Angeles, Calif., archts. Bids Feb. 13. CD 2/21, under LB.

Barrett Constr. Co., 1800 Evans Ave., San Francisco, Calif., CA $561,000. 6 story rein.-con. Rickey's STUDIO INN addn., swimming pool, etc., PALO ALTO, CALIF. John Rickey, 4219 El Camino Real, Palo Alto, Calif. Ernest J. Kump, 450 Ramona Ave., Palo Alto, Calif., archt. Bids Jan. 25. CD 1/23.

R. R. Stark Constr. Co., 550 W. "H" St., Ontario, Calif., LB $493,589, est. $460,000. (8 bidders) 1 story, frame, stucco California SCHOOL, PUENTE, CALIF. Hudson School Dist., 15839 E. Rowland St., Puente, Calif. Kistner, Wright & Wright, 1125 W. 6th St., Los Angeles, Calif., archts. Bids Feb. 15, CD 2/8.

Le Jon Constr. Co., 891 W. Whittier Blvd., La Habra, Calif., Owner Builds. $706,100. 77 DWELLINGS, 1102 and 1162 sq. ft., Ashcomb Dr., Broadvale Dr., Lanham Dr., Roxley Dr., PUENTE, CALIF.

Riha Constr. Co., 8150 Center St., La Mesa, Calif., CA $545,864. (5 bidders) 69,000 sq. ft. frame, stucco various SCHOOLS, SAN DIEGO, CALIF. San Diego Unified School Dist., 825 Union Ave., San Diego, Calif. Joseph T. Erchul, 526 San Diego Trust & Savings Bldg., San Diego, Calif., archt. Bids Feb. 13. CD 11/9.

▲ **Louis C. Dunn, Inc.**, 681 Market St., San Francisco, Calif., CA $1,725,000. 3 story, 170,000 sq. ft. structural steel, cast iron WAREHOUSE and OFFICE BLDG. ASSEMBLY ROOM, CAFETERIA, roof garden, etc., SAN FRANCISCO, CALIF. Eastman Kodak Co., 241 Battery St., San Francisco, Calif., Kitchen & Hunt, 40-1st St., San Francisco, Calif., archts. CD 2/14.

▲ **George Roek Constr. Co.**, P. O. Box 783, Stockton, Calif., LB $2,565,452. (4 bidders) 1 story, wood frame, with steel reinf. Alonzo Stagg HIGH SCHOOL, incl. swimming pool, STOCKTON, CALIF. Stockton City Unified School Dist., c/o Supt., 324 N. San Joaquin St., Stockton, Calif. John Carl Warnecke, 111 New Montgomery St., San Francisco, Calif., archt. CD 1/16.

William Crowell Constr. Co., 170 E. California St., Pasadena, Calif. LB $483,500, est. $475,000 (7 bidders) 32,000 sq. ft. reinforced masonry MONTE VISTA ELEMENTARY SCHOOL, slab floors, WEST COVINA, CALIF. West Covina School Dist., 856 S. Sunset Ave., West Covina, Calif. Fleweelling & Moody, 766 Colorado Blvd., Los Angeles, Calif., archts. Bids Feb. 14. CD 2/8.

CANADA

HEAVY CONSTRUCTION—BA

Ont., Toronto—SCHOOL—BA 3/14—Toronto Bd. Educ., 155 College St., 2 story part bsmt., 50x250 ft., steel frame, masonry Danforth Technical School addn. $676,000. Plans deposit $25. Murray Brown & Elton, 17 Queen St. E., archts. CD 9/6.

Ont., Elliot Lake—BA 3/15—The Improvement District of Elliot Lake, 12,400 lin. ft. water mains, 14,000 lin. ft. sanitary sewers, 4,600 lin. ft. storm sewers, appurtenances, east-half of Neighborhood No. 3. $100,-000, plans deposit $25; 14,000 lin. ft. water mains, 13,300 lin. ft. sanitary sewers, 3,000 ft. storm sewers, appurtenances, west-half of Neighborhood No. 4, $100,-000, plans deposit $25. Marshall, Macklin & Monaghan, 1480 Don Mills Rd., Don Mills, Toronto, engrs.

HEAVY CONSTRUCTION—LB & CA

▲† **Ayers-Hagan-Both, Inc.**, 35 Westminster St., Providence, R. I., LB $1,081,000, est. $1,000,000 (1 bidder) petroleum storage, FY 57 Program, NBy 2846, Spec. 2846/57, ARGENTIA, NEWFOUNDLAND. Director, Atlantic Div., Bureau Yards & Docks, 90 Church St., New York 7, N. Y., U.S.A. Bids Feb. 19. CD 1/24.

† **Arnold M. Diamond, Inc.**, 115 Middle Neck Rd., Great Neck, N. Y. LB $465,715. Maintenance and Repair Projects, Naval Station, NBy 2840, Spec. 2840/57, ARGENTIA, NEWFOUNDLAND, Dir. Atlantic Div., Bureau Yards and Docks, 90 Church St., New York 7, N. Y. Bids Feb. 19. CD 1/24.

† **Arnold M. Diamond, Inc.**, 115 Middle Neck Rd., Great Neck, L. I. LB $485,767, Item No. 1; LB $365,944, Item No. 2; $746,323, Item No. 3; rehabilitation waterfront facilities, FY 57, Maintenance & Repair Proj., NBy 2841, Spec. 2841/56, ARGENTIA, NEWFOUNDLAND. Director Atlantic Div., Bureau Yards & Docks, 90 Church St., New York 7, N. Y. Bids Feb. 19. CD 1/10.

Ellis-Don Ltd., Box 852, London, Ont., LB $259,000 (6 bidders) converting 304 headquarters into APARTMENTS, R.C.A.F. Station, TORBAY, NEWFOUNDLAND Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. CD 1/29.

▲ **The Canadian Dredge & Dock Co. Ltd.**, Dominion Square Bldg., Toronto, Ont. and **J. P. Porter Co. Ltd.**, 1010 St. Catherine St. W., Montreal, Que. CA $6,365,250. channel enlargements at vicinity of Cardinal; CA $3,534,975, channel enlargements at vicinity of Morrisburg, ONTARIO. Hydro-Electric Power Comn. of Ontario, 620 University Ave., Toronto, Ont. Grand total $13,432,375. Bids Jan. 29. CD 12/27;

Atlas Constr. Co. Ltd., 4781 St. Catherine St. W., Montreal, Que. CA $3,532,150. channel enlargements, Point Three Points (Ontario).

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto,

Curran & Briggs Ltd., 61 Haverson Blvd., Toronto, Ont. LB $712,872. (7 bidders) Contract 56-230, grading, culverts and gran. base 9.38 mi. Hy. 129, 7 mi. south of Chapleau of Chapleau Road westerly, Chapleau. Bids Feb. 20. CD 2/4.

McNamara Constr. Co. Ltd., 42 Industrial St., Leaside, Ont. LB $385,990. dredging main harbor south, PORT ARTHUR, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. CD 2/17.

BUILDINGS—LB & CA

▲ **Poole Constr. Co., Ltd.**, 10503 109 St., Edmonton, Alta., CA $1,075,000. Roman Catholic Indian RESIDENTIAL SCHOOL for Lesser Slave Lake Agency, WABASCA, ALTA. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Awarded Feb. 15. CD 1/30, under LB.

James More & Sons Ltd., 239 Argyle St., Ottawa, Ont., LB $749,000 (7 bidders) Public SCHOOL, Smyth Road, OTTAWA, ONT. Ottawa Public School Bd., 330 Gilmore St., Ottawa, Ont. CD 2/4/53.

Louis Markus & Son Ltd., 432 Pembroke St. W., Pembroke, Ont. CA Est. $500,000. 1 story, 200x400 ft. structural steel PLANT, PEMBROKE, ONT. Eddy Match Co. Ltd., 1270 Pembroke St. W., Pembroke, Ont. Bids Feb. 11, awarded Feb. 18. CD 2/11.

Roland Kean Constr., Ltd., 10250 Millen St., Montreal, Que., Owner Builds. $550,000. HOUSING, incl. twenty-two 28x38 ft., brick duplexes, concrete fdns., Sauve St. between Mileen and Sauriol Sts., MONTREAL, QUE.

ALASKA

HEAVY CONSTRUCTION—BA

† **Alaska**—TACAN FACILITIES—BA 3/19—U. S. Eng., Anchorage, TACAN facilities, King Salmon Airport. Bids 6/1 rejected. CD 6/7/56, under LB.

HEAVY CONSTRUCTION—LB & CA

† **Chris Berg, Inc.**, 2730 Westlake Abbe. N., Seattle, Wash., CA $943,600. White Alice facility with tower, equipment bldg., access road at Sitkinak Inv. 57-41, ALASKA U. S. Eng., Anchorage, Alaska. Bids Feb. 12, awarded Feb. 18. CD 2/20, under LB.

▲† **S. Birch & Sons and Green Constr. Co.**, Central Bldg., Seattle 4, Wash., LB $1,238,193, est. $1,342,-688 (4 bidders) stabilization of runway and taxiway shoulders, Elmendorf Air Force Base, Inv. 57-56, ALASKA, U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Feb. 19. CD 2/6.

▲† **Manson-Osberg Co.**, 1132 N. 128 St., Seattle 33, Wash. LB $7,246,724, est. $8,807,753. (9 bidders) installing Cold Bay and Cape Sarichef to extend DEW system in to Aleutian Islands with composite bldg., ammo storage bldg, wave-guide supports, etc. Inv. 57-58, ALASKA. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Feb. 21. CD 2/7.

▲† **Wayne Constr. Co.**, 3810 Stone Way, Seattle 3, Wash., LB $1,893,023, (3 bidders) 24 antenna coves at Alaska Military Sites under Inv. 57-66, ALASKA. Alaska Communication Sys., Dpt. Army, 4735 E. Marginal Way, Seattle 4, Wash.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **Constructora Brillembourg Villegas Asociados, C.A.**, Edificio General Paez, Officina 315, Esquina La Marron Carracas, D. F., Venezuela. CA $10,403,763. system of cofferdams for Macagua No. 1 hydroelectric plant on lower Caroni River, VENEZUELA. Comision de Etudios Para la Electricicacion de Caroni, Torre Sur, Piso 6, Central Simon Bolivar, Caracas, Venezuela. CD 12/19, under LB.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Mich., Waterford**—Waterford Twp. Bd., Waterford, water sys., storage and distr. facilities, purification, etc. $5,900,000. Johnson & Anderson, 1307 Pontiac State Bldg., Pontiac, consult. engrs.

▲ **Okla., Bartlesville**—City, addnl. water supply, $2,250,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs.

▲ **Okla., Muskogee**—City, City Hall, voted bonds Feb. 12, 24 in. water main extens., $1,100,000. CD 2/5.

Tex., Lamesa—City, City Hall, water mains, $50,000; water supply wells, $75,000; WW sys. imprvs., other than wells and lines, $75,000. Roberts, Merriman & Bowden, 1406 Ave. Q, consult. engrs.

▲ **Tex., Sherman**—City c/o Robert L. Brown, mgr., Sherman, water supply line using Lake Texoma water, $2,000,000; lake intake, $175,000; water treatment plant, $715,000; water supply line, $600,000; treated water feeder main and distr. $510,000; misc. water imprvs. and sewerage sys. in Industrial Area, $400,-000. Freese & Nichols, 407 Dancigar Bldg., Fort Worth, consult. engrs. CD 1/11/55.

† **Alaska, Kodiak**—Alaska P. Wks., Dept. Interior, Juneau, water supply imprvs. $134,600. Work may start this year.

▲ **Que., Shawinigan South**—Municipality, Shawinigan South, filtration plant, $1,000,000. Beauchemin-Beaton-Lapointe, 1610 Sherbrooke St. E., Montreal, consult. engrs. CD 2/20/51.

SEWERS, WASTE DISPOSAL

▲ **Calif., Florin**—Florin Community Services Dist., c/o Director, Florin, bond election Apr. 9, sewerage system expansion. $1,000,000. CD 2/12.

Mass., Arlington—Town, Bd. Selectmen, Town Hall, incinerator, $300,000.

▲ **Neb., Lincoln**—City, City Hall, sanitary sewer imprvs., city-wide proj. $4,000,000. Harold Hoskins & Assoc., 1630 Q St., Lincoln, consult. engrs. Carl Fisher, city engr. CD 3/8/56.

▲ **N. J., Bound Brook**—American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y., sewerage sys. and secondary treatment plant by Somerset-Raritan Sewer Auth. $4,000,000. Whitman, Requardt & Assocs., 1304 St. Paul St., Baltimore, Md., consult. engrs.

O., **Grove City**—City Council, E. Ernest Hysell, mayor, City Hall, sewerage sys. expansion (4 alternates) incl. (1) enlarging present plant, $300,000-$500,000 (2) new plant, $575,000-$775,000 (3) run trunk line into Columbus sub sewage treatment plant, $285,000 (4) run line to proposed Columbus sewer along Big Run, $225,000. H. G. Dill, 2607½ N. High St., Columbus, consult. engr.

O., **Ironton**—Comrs. Lawrence Co., Court House, sewage treatment plant for West Chesapeake Sewer District, Chesapeake $307,412, G. C. Kinley, Ironton, consult. engr.

O., **Marion**—City, City Hall, sewers in Pearl St. $51,000, Silver St., $267,000, and Davids St. $83,500. Floyd G. Browne & Assoc., Marion, consult. engrs.

▲ **Pa., Media**—Delaware County Incinerator Auth., Court House Annex, 3 incinerators. $8,000,000. Damon & Foster, Sharon Hill, consult. engrs.

BRIDGES

SOUTH CAROLINA—State Hy. Dpt., Columbia,
Beaufort and Jasper Counties—relocation 10 mi. approach roads to Broad River Bridge. $200,000.

QUEBEC—Provinical Dpt. Roads, Quebec City,
Lotbiniere—bridge approaches at Lotbiniere, $225,000.
St. Severin—bridge over Riviere des Enivies, $175,000.

STREETS AND ROADS

▲ **Ariz., Phoenix**—Maricopa Co. Courthouse, paving projects; total 11 mi. Bethany Home Rd. and N. 7th St., 48 ft. plant mix bit. surfacing over present alignment, curbs, gutters, sidewalks. $1,500,000. A. E. Ferguson, 15 E. 5th, Tempe, consult. engr. CD 12/23/49.

Calif., Alameda—Alameda Co., c/o Clerk, Courthouse, Oakland, 2½ mi. roadway from Alquire to Decato Rds., near here. $254,000.

Calif., San Mateo—City, City Hall, various city street repair program for 1957. $260,000.

Kan., Concordia—City, Harold E. Horn, mgr., City Hall, imprv. various streets in business district. $190,000. Wilson & Co., 705 E. Crawford St., Salina, consult. engr. CD 12/3.

▲ **PENNSYLVANIA**—State Hy. Dpt., North Office Bldg., Harrisburg,
Bucks and Philadelphia Counties—constr. Delaware Expressway along Delaware River from Walt Whitman Bridge, Philadelphia to Pennsylvania Turnpike at Edgely, Bucks Co., $200,000,000;
9 mi. section in Bucks Co., Phila. city line to Turnpike, Edwards, Kelcey & Beck, 1805 Walnut St., Phila., engrs.;
Phila.; Line to Cottman St., 3.2 mi., Edwards, Kelcey & Beck, 1805 Walnut St., Phila., engrs.;
Cottman St. to Frankford Arsenal 2.4 mi., Richardson Gordon & Associates, 3 Gateway Center, Pittsburgh, engrs.;
Frankford Arsenal westward 1.1 mi., Albright & Friel, Inc., 3 Penn Center Plaza, Phila., Zone 2, engr.;
Continuing westward to Norris St. 2.8 mi., Gannett Fleming Corddry & Carpenter, Inc., 600 N. Second St., Harrisburg, engr.
Norris St., Lombard St. 2.3 mi., Ammann & Whitney, Port Authority Bldg., 111 Eighth Ave., New York 11, N. Y., engrs.;
Lombard St. to Walt Whitman Bridge 2.3 mi., Michael Baker Jr., Inc., Rochester, engrs. R. A. Farley, act. ch. engr. CD 1/18.

▲ **SOUTH CAROLINA**—State Hy. Dpt., Columbia,
Charleston Co.—wid'n. 2.4 mi. U. S. 17, through Mt. Pleasant incl. bridge at Shem Creek, $600,000
Cherokee and Spartanburg Counties—imprv. U. S. 29, 40 mi. to interstation standards, incl. wid'n. to 4-lanes, constr. frontage roads and interchanges from point near Fair Forest to North Carolina line at Grover, FAI, $6,000,000.
Greenville Co.—constr. 3.5 mi. U. S. 29, Urban project in Greenville incl. grade separations, $2,000,000.
by-pass at Travelers Rest 4 mi. U. S. 25, with bridges, $500,000.
constr. 3 mi. US 29 interstate route from Gantt to Greenville and on section of Mills Ave. in Greenville, incl. bridges FAI $600,000.
Greenwood Co.—by-pass at Greenwood 4 mi. S. C. 72, $300,000.
Lexington Co.—constr. 8 mi. U. S. 176, Interstate Hy. from Dixiana to join U. S. 76 near Columbia, FAI, $3,500,000.
Marlboro Co.—by-pass at McColl 4 mi. U. S. 15, $150,000.
Pickens Co.—relocation 18.5 mi. U. S. 123, between Clemson and Easley, incl. bridges, $2,200,000.
Richland Co.—wid'n. 2.4 mi. section S. C. 12, of Forest Drive in Columbia, $350,000.
constr. 1 mi. U. S. 76, of Interstate route connection from Gadsden St. in Columbia to the Broad River incl. Interchanges, $400,000.
Richland and Lexington Counties—relocation 10 mi. U. S. 76 for Interstate Hy. incl. bridges FAI, $2,800,000.

Spartanburg Co.—new location 5 mi. U. S. 176 of Pine St. from Chinquapin St. to point about 1 mi. north of Hayne Shop, incl. bridges, $2,300,000.
relocation and reconstr. 10 mi. S. C. 296, between Spartanburg and Reidville, incl. bridges $500,000.
Spartanburg and Greenville Counties—relocation 4 mi. S. C. 417 of highway near Enoree River with bridges, $200,000.
Sumter Co.—wid'n. 4 mi. to 4-lanes U. S. 76 from Wateree River to Shaw Air Force Base, $300,000.
controlled access by-pass 6 mi. U. S. 378, incl. bridges, $1,300,000.
Tex., Greenville—Hunt Co., Courthouse, road and bridge repairing, maintenance; in 1957. $145,000.
Tex., Rio Grande City—Starr Co., Courthouse, road repairing and constr. $102,000.
Tex., Suphur Springs—Hopkins Co., c/o Courthouse, road and bridge repairing, maintenance, grading, drainage, $141,115.
Alaska, Palmer—City, City Hall, voted bonds Feb. 9, paving streets. $200,000.
† **Alaska, Petersburg**—Alaska P. Wks., Dept. Interior, Juneau, street imprvs. $100,300. Work may start this year.
† **Alaska, Skagway**—Alaska P. Wks., Dept. Interior, Juneau, street imprvs. $139,200. Work may start this year.
QUEBEC—Provincial Dpt. Roads, Quebec City,
Gentilly—paving highway between St. Pierre les Becquets and Gentilly, $350,000.
Nicolet—grading, paving highway in city, $250,000.
Ste. Emilie—paving roads from Ste. Emilie to Deschaillons, $350,000. Ernest Gohier, c/o owner, ch. engr.

EARTHWORK, WATERWAYS

† **Alaska, Haines**—Alaska P. Wks., Dept. Interior, Juneau, small boat harbor. $181,400. Work may start this year.
† **Alaska, Skagway**—Alaska P. Wks., Dept. Interior, Juneau, small boat harbor. $168,800. Work may start this year.

AIRPORTS

Ariz., Phoenix—AIRPORT BUILDING—City, City Hall, 2 story airport building for CAA offices. $420,000.

PUBLIC BUILDINGS

Ark., Fort Smith—SCHOOL—Bd. Educ., Chris Corbin, supt. Schools, Fort Smith, plans by Bassham & Cochram, Kennedy Bldg., 1 story, 25,000 sq. ft. school, Kelley Hy. at Waldron Rd. $344,000.
Ark., Helena—HOSPITAL—Helena Hospital, Helena, plans by Wittenberg, Delony & Davidson, Pyramid Bldg., Life Bldg., Little Rock, 2 story, 30-bed hospital addn. with 1 story existing wing addn. and remodeling part of present hospital bldg. $750,000.
Colo., Colorado Springs—STUDENT UNION BUILDING—Colorado College, Cutler Hall, plans by Edward L. Bunts & F. Lamar Kelsey, 21 E. Monument St., constr. 3 story, bsmnt. Student Union Bldg. $750,000. John E. Bunts, 21 E. Monument St., consult. engr. CD 1/18.
▲ **Colo., Denver**—OFFICE—State of Colo., Health Dpt., 1422 Grant St., plans by Eugene D. Sternberg, 2364 East Third Ave., 4 story, bsmnt., 55,615 sq. ft. office for State Board of Health. $1,000,000.
Colo., Fort Carson — SCHOOL — Fountain-Fort Carson School Dist., c/o Charles Tewell, supt., school. $389,050.
Colo., Golden—JAIL—Bd. Comrs. Jefferson Co., Courthouse, plans by James H. Johnson, engr.-archt. Lakewood, jail to house approximately 125 prisoners. $450,000. James H. Johnson, Lakewood, consult. engr. CD 12/3.
Conn., New Britain—DORMITORIES—State P. Wks. Dpt., 165 Capitol Ave., Hartford, dormitories, State Teachers' College. $900,000.
▲ **Conn., Waterbury**—HOUSING UNITS—Waterbury Housing Auth., 156 Harris Circle, plans by Louis R. Fucito, 37 Hillside Ave., 180 unit moderate rental housing. $2,420,000. Americo Nemiccolo, Glen St., Marlboro, Mass., consult. engr.
Kan., Haysville—SCHOOL—School Dist. No. 187, Sedgwick Co., W. C. Freeman, supt. Schools, 7233 Van Arsdale St., Wichita, Zone 15, plans by D. E. Stiger, Municipal Airport, Hutchinson, elementary school, $350,000. CD 2/8.
Ky., Lexington—SCHOOL—Fayette Co. Bd. Educ., Lafayette Parkway, plans by Meriwether-Marye & Assocs., 248 Short St., 1 story, 4,700 sq. ft. brick, concrete block Gardenview Elementary School. $500,000. Proctor-Inglis, 915-S. Limestone St., consult. engrs. CD 11/21.
▲ **Me., Gorham**—CLASSROOM-LIBRARY—State, Dpt. Educ., State House, Augusta, plans by Stanley S. Merrill, 95 High St., Auburn, 3 story classroom bldg. and library, State Teachers College, $1,000,000.
▲ **Mass., Attleboro**—SCHOOL—City, Sanford St., Senior High School. $2,225,000. Constr. in 1957.
Mass., Beverly—SCHOOL—City, School Bldg. Comn., John E. Troop, chn., 29 Winthrop St., plans by Hugh Stubbins Assoc., 806 Mass. Ave., Cambridge, elementary school, Ryal Side Sect., $350,000.
Mass., Weymouth—SCHOOL—Town, School Bldg. Comn., 89 Middle St., East Weymouth, plans by Collens, Willis & Beckonert, 20 Newbury St., Boston, elementary school, Green St., North Weymouth, $525,000.
Mo., Ferguson (St. Louis 21 P.O.)—SCHOOL—Ferguson-Florissant School Dist. R-2, Virgil C. McCluer, supt. 655 January Ave., Zone 21, voted $800,000 bonds Feb. 11, elementary school and addn. Charles W. Lorenz, 700 N. Ballas Rd., Kirkwood, Zone 22, archt. CD 2/7.
▲ **N. J., East Orange**—SCHOOL—City, City Hall, plans by Emil Schmidlin, Central Ave., 2 story high school addn., and renovation, Walnut St. $3,250,000.
▲ **N. Y., New Rochelle**—SCHOOLS—Bd. Educ., plans by Eggers & Higgins, 100 E. 42 St., New York, Zone 17, Senior High School on 47 acre tract on Quaker Ridge Rd., $8,200,000; plans by Sherwood, Mills & Smith, 65 Broad St., Stamford, Conn., elementary school, Quaker Ridge Rd., $1,750,000; new school to replace Lincoln School in downtown area, $1,350,000; plans by Lee Perry, 419 North Ave., New Rochelle, conversion of old Senior High School on North Ave. into Junior High School, $1,300,000; imprv. Mayflower School, $600,000.
▲ **N. Y., New York**—BUS TERMINAL—Port of New York Auth., 111 Eighth Ave., New York, Zone 11, 2 story, 200x800 ft. Washington Heights Suburban Bus Terminal, with ramps overpassing Fort Washington Ave. to connect with George Washington Bridge at W. 178 and 179 Sts. $12,000,000. To go ahead in 1957. CD 4/10/52.
O., Benton—HIGH SCHOOL—East Holmes Local Dist., Benton, voted $678,000 bonds Feb. 5, high school and other facilities. Joseph Baker & Assoc., Newark, archts. CD 10/10.
▲ **O., Columbus**—COLLEGE OF LAW—Ohio State University, N. High St., plans by Potter, Tyler, Martin & Roth, 128 E. 6th St., Cincinnati, college of law bldg. for university, Sect. 2, $1,500,000, constr. in March or April. Wm. D. Ehlers, Union Tr. Bldg., Cincinnati, consult. engr.
▲ **O., Oxford**—DORMITORIES—Miami University, Oxford, 2 dormitories $1,500,000. Constr. late in 1957.
Okla., Claremore—GENERATING PLANT, etc.—City, City Hall, electric generating plant and rebuilding electrical distr. sys. $500,000. Lee Feltig, c/o owner, engr.
▲ **Pa., Ebensburg**—HOSPITAL—General State Auth., 18 and Herr Sts., Harrisburg, mental hospital for retarded children for State Welfare Dpt. $3,280,000. A. F. Jones, ch. engr.
▲ **Pa., Erie**—CITY HALL—City, City Hall, bond election May 21, 5 story, bsmnt. city hall, incl. underground parking facilities, State and Peach Sts. $3,600,000. Nelson, Goldberg & Heidt, 1215 G. Daniel Baldwin Bldg., archts. CD 8/22/55.
Pa., Lock Haven—DORMITORY—General State Auth., 18 and Herr Sts., Harrisburg, plans by Celli-Flynn, 335 Shaw Ave., McKeesport, dormitory at Lock Haven State Teacher's College, $800,000. A. F. Jones, ch. engr. CD 11/25/55.
▲ **Vt., Brattleboro** — SCHOOL — Union School District, supt. Schools, 95 Green St., plans by Nichols & Butterfield, 998 Farmington Ave., West Hartford, Union Regional Junior-Senior High School. $1,400,000. CD 12/22/54.
▲ **Va., Arlington**—HIGH SCHOOL—Arlington County School Bd., 1426 Quincey St., plans by Rhees Burket, 1223 Connecticut Ave. N. W., Wash., D. C., Yorktown High School, $3,500,000. CD 6/7.
Wash., Elma—HIGH SCHOOL—School Dist. 137, Elma, plans by C. Rueger, 225 S. Tacoma St., Tacoma, high school addns. $596,000. $326,000 bonds voted Feb. 5. CD 11/30.
† **Alaska, Dillingham**—HIGH SCHOOL—Alaska P. Wks., Dpt. Interior, Juneau, high school. $502,500. Work may start this year.
Que., Ste. Ann de la Perade—FACTORY—Municipality of Ste. Anne de la Perade, reconstr. 2 story, 40x80 ft. wood, cement block factory. $100,000.

COMMERCIAL BUILDINGS

▲ **Ariz., Phoenix**—OFFICE—David H. Murdock, 3502 N. Central, plans by Charles Polacek, 3424 N. Central Ave., 3 story 80,000 sq. ft. office bldg., parking facilities. $1,000,000.
Ariz., Phoenix—COUNTRY CLUB—Paradise Valley Country Club, 7101 Tatum Blvd., country club addn. $500,000.
Calif., Barstow—HOUSING—115th Naval Dist., Pub. Works Office, 1220 Pacific Hy., San Diego, constr. of 51 Capehart Housing units at Marine Corps Supply Center, $841,000. Tuttle-Kellog Eng. Co., Inc., 9548 E. Las Tunas Dr. Temple City, consult. engrs. CD 12/6/50.
▲ **Calif., La Jolla**—DWELLINGS—H & B Constr. Co., 2179 Avenida de la Playa, plans by Earl G. Kaltenbach, Jr., 17057 Ventura Blvd., Encino, 250 dwellings, 1,600 to 1,800 sq. ft., frame, stucco in La Jolla Highlands. $2,500,000.
▲ **Calif., San Francisco**—OFFICE—Bethlehem Pacific Coast Steel Corp., 20th and Illinois Sts., plans by Welton Beckett & Assocs., 153 Maiden Lane, 30,000 sq. ft. multi-story office bldg., Davis St. between Sacramento and California Sts. $1,000,000.
▲ **Conn., Norwalk**—HIGH SCHOOL—Diocese of Bridgeport, Washington Ave., Bridgeport, plans by Anthony J. DePace, 151 W. 46 St., New York, N. Y., Catholic High School, West Rocks Rd., $1,250,000. CD 2/9/55.
▲ **Ill., Chicago**—HOSPITAL—Holy Cross Hospital, 2700 W. 69 St., plans by Joseph Bagnuolo & Assoc., 6968 W. North Ave., hospital addn. $4,000,000.
Mass., Brookline—SCHOOL—Holy Cross Academy, c/o Sister Vera Clare, CSS, 135 Fisher St., plans by Maginnis & Walsh & Kennedy, 126 Newbury St., Boston, 2 story school. $350,000. Constr. in 1957.
Mass., Cambridge — UNIVERSITY BLDGS. — Harvard University, Cambridge, health center, $2,500,000; library endowment, $15,000,000; behavioral sciences bldg., $4,000,000; faculty offices and conference rooms, $2,500,000; chemistry bldg. and endowment, $2,200,000; astronomy bldg. and endowment, $1,300,000; theater and visual arts, $1,500,000; five houses, $22,000,000; two freshman dormitories, $2,000,000; non-resident undergraduate center, $1,000,000.
Mass., Northampton—CHURCH—Edwards Congregational Church, Richard Linde, minister, Main St., plans by Harold E. Wagoner, Architects Bldg., Phila., Pa., church, $350,000. Constr. in 1957-58.
N. J., Princeton—CAMPUS—Princeton University, Princeton, campus bldg. to house Princeton University store, and student publications. $350,000.
N. Y., New York—AUDITORIUM—Yeshiva University, 270 Park Ave., plans by Kelly & Gruzen, 80 Fifth Ave., New York, Zone 3, Mary & Karl Robbins Auditorium at Albert Einstein College of Medicine, Morris Park Ave. and Eastchester Rd. $500,000. CD 6/27/51.
▲ **N. Y., White Plains**—OFFICE—New York Telephone Co. 140 West St., New York, Zone 7, office on 3½ acre tract on county center rd. $1,500,000.
▲ **Ore., Portland**—HOTEL—Western Hotels, Inc., Olympic Hotel, Seattle 1, Wash., plans by Victor N. Jones, 1717 W. Park Ave., 200-room Benson Hotel addn. $3,000,000.
▲ **Pa., Phila.**—SHOPPING CENTER—Gilbert & Spiegel, 225 S. 15 St., plans by James E. Fox, 2139 MacLarie Lane, Broomall, shopping center, incl. drive-in theater, motor lodge, drive-in restaurant, service station, auto showroom, Essington and Tinicum Aves. $4,000,000. Bids in about 3 months.
▲ **S. C., Charleston**—HOUSING UNITS—Procurement Officer, Charleston Air Force Base, Charleston, construct and finance 600-units of Capehart Housing, Charleston Air Force Base. $6,000,000-$10,000,000. CD 9/19/51, under Airports.
▲ **Wis., Glendale**—HOSPITAL—Mercy Home & Hospital Assn., 2319 N. 2 St., Milwaukee, plans by Fritz von Grossmann, 5455 W. Burleigh St., Milwaukee, hospital. $1,500,000.
▲ **Que., Montreal**—COLLEGE—Peres Ste. Croix, College Notre Dame, 3745 Queen Mary Rd., plans by Gerard Notebaert, 7801 St. Denis St., 7 story bsmnt. 217x150 ft., rein.-con., foundation frame and slab, part structural steel frame, stone and brick walls, social center at College Notre Dame. $1,000,000. Lalonde & Valois, 606 Cathcart St., Montreal, consult. engrs.
Que., Montreal—CHURCH, etc.,—Roman Catholic Parish of St. Antonin, 5391 Snowdon Ave., plans by Chrevier, Lemieux & Mercier, 1065 Pratt Ave., Outremont, church and presbytery, Coolbrooke and Snowdon Aves. $400,000.
Que., Ste. Rose—HOUSING PROGRAM—Raymond Ethier, 12 Rue Labonte, Ste. Therese de Blainville, housing program contemplated on Leroux St. and Blvd. Belisle, $600,000.

INDUSTRIAL BUILDINGS

Colo., Loveland—PLANT—Scientific Radio Products Co., 215 S. 11 St., Omaha, Neb., plant $100,000.
Conn., Norwalk—STORAGE TANK—Connecticut Light & Power Co., Wall St., Norwalk, gas storage tank, Harbor Ave. $200,000.
Conn., Stamford—GARAGE—Fowler Hartman, 1122 Main St., Plans by B. L. Whinston, 832 Bedford St., garage, Lenox Ave. $150,000.
▲ **Ill., Litchfield**—PLANT—International Paper Co., 220 E. 42 St., New York, N. Y., 600,000 sq. ft. paper sacks mfg. plant, U. S. Hy. No. 66 at junction with New York Central R.R. in southwestern section of city. $6,000,000.
Ill., North Chicago—LABORATORY, etc.—Fansteel Metallurgical Corp., 2200 N. Sheridan Rd., plans by A. Epstein & Sons, Inc., 2011 W. Pershing Rd., Chicago, 3rd floor laboratory and office bldg. addn., 2 story new sintering bldg. $665,000. CD 8/23.
▲ **Ind., Indianapolis**—WAREHOUSE, etc.—The Kroger Co., 1240 State St., Cincinnati, O., masonry, structural steel frame warehouse and bakery, $3,225,000. Lewis W. Hixson, c/o Hixson, Tarter & Assocs., 2320 Victory Parkway, Cincinnati 1, O., consult. engr. CD 11/21/55.
Ky., Lexington—LABORATORY—International Business Machines Corp., 590 Madison Ave., New York 22, N. Y., laboratory, $480,000.
▲ **Mich., Highland Park**—PLANT—Ford Motor Co., J. A. MacAlarney, dir. plant engr., Box 117, Dearborn, Higland Park plant, incl. alterations and power plant, 14300 Woodward Ave. $6,800,000.
▲ **Mo., Berkeley** (St. Louis 21 P. O.)—SUB-STATION—Union Electric Co., 315 N. 12 Blvd., St. Louis, Zone 1, sub-station on 6 acre tract adjacent to Graham and Airport Rds. $1,750,000.
▲ **N. J., Florham Park**—BULDINGS—Esso Research & Engineering Co., U. S. Hy. 1 and Park Ave. S., Linden, 150,000 sq. ft. planning and architectural study bldg., 100,000 sq. ft. office and laboratories; 30,000 sq. ft.
(Continued on page 130)

Summit Mining Corporation's new Butler plant near Aspers, Pennsylvania, where SER-X, a hydrous alumina silicate, is processed for use as an industrial filler.

Metal buildings...

how good are they?

Metal buildings are as good as they are designed and manufactured. They range from the low quality "jerry-built" structure to the high quality modern Butler Metal Building—a thoroughly engineered, die-formed metal structure offering advantages not found in conventional buildings.

For example, its rigid steel frame supports the building—eliminates posts, gable trusses and load-bearing walls. Slim, rust-resistant metal cover panels, properly insulated, provide better insulating qualities than a masonry wall a foot thick.

Modern Butler metal buildings can be heated, air-conditioned, ventilated and lighted more efficiently than conventional buildings. They are wind-safe, fire-safe and require very little maintenance. They are erected or expanded quickly, saving time and construction costs.

So economical they are ideal for warehouses and terminals, yet so well made they are specified for factories and commercial buildings.

Many leading corporations have examined Butler buildings, purchased them, and are thoroughly satisfied. We urge you to examine a Butler building personally. Your Butler Builder will show you ones he has erected in your area. His name is listed under "Buildings" in the yellow pages of your phone book. Or write direct. Ask to see the new sound-slide film, "Why Metal Buildings?"

BUTLER STEEL PRODUCTS

BUTLER MANUFACTURING COMPANY

7418 East 13th Street, Kansas City 26, Missouri

Sweet's AISC

Manufacturers of Buildings • Oil Equipment • Farm Equipment • Dry Cleaners Equipment • Outdoor Advertising Equipment • Custom Fabrication

Sales offices in Los Angeles and Richmond, Calif. • Houston, Tex. • Birmingham, Ala. • Atlanta, Ga. • Minneapolis, Minn. • Chicago, Ill. • Detroit, Mich. • Cleveland, Ohio New York City and Syracuse, N.Y. • Washington, D.C. • Burlington, Ontario, Canada

(Continued from page 128)

to house miniature models of equip., etc., on 650 acre tract, $5,000,000.

N. Y., Brooklyn—FACTORY—Abraham Rodolitz, 40 Neptune Ave., Woodmere, 1 story factory, 47-75 Onderdonk Ave. $180,000. Abrahams & Hertzberg, 767 Lexington Ave., New York, Zone 21, engrs.

N. Y., New York—FACTORY—General Flexware Corp., 151 W. 36 St., Zone 1, plans by Victor Mayper, 110 W. 40 St., Zone 36, 2 story factory, on south block front of 140 St. between Park Ave. and Canal Place, $252,000.

▲ **N. C., Brevard**—PLANT—E. I. duPont deNemours & Co., duPont and Nemours Bldgs., Wilmington, Del., hyper-pure silicon plant. $3,000,000.

▲ **O., Lorain**—TERMINAL—Dandrea & Nardini Const Co., Lorain, terminal for hauling away cars to be built at new Ford plant in Brownhelm Twp. $1,000,000. Will be leased to 2 companies who have contracts with Ford to haul assembled units.

O., Marion—PLANT—Wyandot Blacktopping Co., Marion, asphalt mixing and batching plant, on Marion-Williamsport Rd., incl. dust collecting system, 4-10,-000 gal. asphalt emulsion storage tanks; mixing and batching bldg. and an aggregate storage bin. $125,000.

Okla., Tulsa—CAR REPAIR BUILDING—Wilkerson Chevrolet Co., 2547 E. 11 St., plans by Geo. T. Gould, Tri State Bldg., 2 story car and repair bldg. $250,000.

▲ **Ore., Clackamas**—DISTRIBUTION CENTER—Safeway Stores, Inc., 1139 S E 3rd Ave., Portland, plans by Williams & Martin, 1919 S W 12th Ave., Portland, distribution center. $3,000,000. Bids in April.

Tex., Amarillo—FACTORY, etc.—Cooper Homes, Inc., E. E. Cooper, pres., S. Washington St., prefabricated housing mfg. factory and storage warehouse. $100,000.

Tex., Dallas—WAREHOUSE—The Bennett Printing Co., Corsicana St., plans by James E. Anderson, 610 Thomas Bldg., 2 story 132x76 ft., rein. con. warehouse. $110,000.

Tex., Dallas—FOODS BLDG.—Morton Foods, 6333 Denton Dr., plans by Bertram C. Hill, 5528 Live Oak St., 1 and 2 story foods bldg. addn. $150,000.

Tex., Falfurrias—PLANT—La Gloria Oil & Co., c/o Jno. F. Lynch, Driscoll Bldg., Corpus Christi, plant expansion, $500,000.

Tex., Grapevine — TERMINAL — Continental Oil Co., 2806 Sylvan Ave., Dallas, Petroleum Products Terminal on 67-acre site, Highway 121, $320,000.

Tex., Houston—PLANT—Care, Inc., c/o Attorney Harvey T. Flemming, First National Bank Bldg. dry cleaning and laundry plant. $400,000.

Tex., Odessa—SHOP—Bill Massel, c/o Peters & Fields, archts., 216 E. 8th St., Odessa, shop. $100,000.

▲ **Tex., Port Arthur** — PLATFORMER UNIT, etc. — Gulf Oil Corp., Port Arthur, 23,500 daily capacity platformer unit, $1,750,000; 60-ton daily capacity sulfur production unit, $500,000.

Wash., Tacoma—PLANT—Balfour, Guthrie & Co., Ltd., Milwaukee Ocean Dock No. 2, Tacoma, synthetic resin plant $250,000. Pacific Engineers, Maritime Bldg., Seattle, Zone 4, consult. engrs. Work to begin soon. CD 1/18.

Ont., Kingston—MILL, etc.—Aluminum Co. of Canada Ltd., Sun Life Bldg., Montreal, Que. 80x420 ft. in two sections, foil fabrication mill and shipping block exten., concrete fdn. on present bldg. $406,500. Work to begin in summer. CD 5/8.

Que., Beloeil—PLANT—Canadian Industries Ltd., 1235 McGill College Ave., Montreal, explosive research laboratories, to comprise 5 bldgs. at plant near Richelieu River, $600,000.

Que., Chicoutimi—OIL RESERVOIR—Les Huiles Fleur de Lys Limitee, Chicoutimi, 2 m.g. oil reservoir. $100,000.

Que., Montreal—FACTORY—Industrial Machining Ltd., 3560 St. Joseph Blvd. E., factory repairs contemplated following fire damage. $100,000.

Que., Ste. Anne de la Perade — FACTORY — Roland Simard, 2 ru Lalemant, Sorel, reconstr. 2 story 80x120 ft. wood, block, factory. $150,000.

UNCLASSIFIED

Calif., Los Angeles—PARK DEVELOPMENT—Bd. Supervs. Los Angeles Co., Hall of Records, Los Angeles, Two-Strike Park development, Prop. 8843, incl. walks, lawns, ball diamonds and parking lot, etc. LaCrescenta. $104,787. J. A. Lambie, c/o owner, engr.

Georgia—ELECTRIC DISTRIBUTION LINE—Rayle Elec. Membership Corp., Washington, 120 mi. electric distr. line and system imprvs., Wilkes Co. $385,000.

Iowa, North Dakota and Missouri—TELEPHONE SYSTEM—Iowa-Illinois Telephone Co., Arthur W. Sanders, mgr., New London, imprvt. and exten. rural telephone system to serve 19 counties in Iowa, 4 in North Dakota and in Clark Co., Missouri, incl. existing facilities, Iowa 556A Project. $3,050,000.

Kentucky—RURAL DISTRIBUTION LINES—Inter-County Rural Electric Co-operative, Corp., Danville, 45 mi. rural distr. lines, sub-station and sys. imprvs., Boyle Co. $290,000. CD 1/3/55.

▲† **Mass., Boston**—DRYDOCK—First Naval Dist., 495 Summer St., Boston, 1,160 ft. drydock at Navy Yard, $20,000,000. Fay, Spofford & Thorndike, Inc., 11 Beacon St., Boston, consult. engr.

Minnesota—RURAL DISTRIBUTION LINES—Runestone Electric Assoc., Alexandria, 60 mi. rural distr. lines, addnl. sub-station capacity, sys. imprvs., Douglas Co. $365,000.

▲ **Mississippi**—RURAL DISTRIBUTION LINES—Delta Electric Power Assoc., Greenwood, 141 mi. rural distr. lines, headquarters facilities, sys. imprvs., LeFlore Co. $1,370,000. CD 7/25/52.

Missouri—RURAL DISTRIBUTION LINES—Boone Electric Co-operative, Columbia, 50 mi. rural distr. lines, sys. imprvs., Boone Co. $530,000. CD 10/14/48.

Nebraska—TRANSMISSION LINE—Consumers Public Power Dist., Columbus, transmission line Whitney to Crawford, $109,000, R. L. Schacht, c/o owner, ch. engr.

N. Y., Brooklyn—COMFORT STATION, etc.—Comr. Parks, Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and Fifth Ave., New York, Zone 21, plans by Ernest J. Clark, 305 E. 63 St., New York, Zone 21, 1 story comfort station and playground, 1715-71 E. 49 St. $189,000.

▲ **N. Y., Brooklyn**—PIER—Port of New York Auth., 111 Eighth Ave., New York, Zone 11, Pier 10, two-berth finger pier at Atlantic Basin, steel, concrete 710x325 ft., replacing old Pier 33, $5,000,000. To go ahead in Fall 1957. CD 11/1/55.

N. Y., New Rochelle—PLAYGROUND—Bd. Educ., New Rochelle, playground at Trinity School. $150,000.

North Carolina—RURAL DISTRIBUTION LINES—Jones-Onslow Electric Membership Corp., Jacksonville, 40 mi. rural distr. lines, sys. imprvs., Jones Co. $500,000. CD 3/3/47.

Texas—PETROLEUM PRODUCTS LINE—Continental Pipe Line Co., c/o Fair Bldg., Fort Worth, conversion of existing crude oil line between Wichita Falls and Saginaw, into a petroleum products line, $200,000.

▲ **Texas** — RURAL DISTRIBUTION LINES — Midwest Electric Co-operative, Roby, 232 mi. rural distr. lines, 6 mi. 69 kv transmission line and system imprvs., Fisher Co. $1,524,000. CD 7/10/53.

Texas—RURAL DISTRIBUTION LINES—Panola-Harrison Elec. Co-operative, Marshall, 130 mi. electric distr. lines, Panola Co. $250,000.

Texas—GAS LINE—Texas Eastern Transmission Corp. Texas Eastern Bldg., Shreveport, La., 17 mi. 8 in. and 3 mi. 6 in. gas line and facilities from Baytown-Hankamer line to Alco-Mag field in Harris Co. $857,000.

Tex., Amarillo—SWIMMING POOLS, etc.—Ricks-Maguire Co., 1008 Harrison St., Amarillo, swimming pool, ice skating pond, $90,000; putting greens, driving range, athletic courts, $85,000.

Wis., Racine—ANIMAL BLDG.—City, City Hall, 2 story, bsmnt., 80x150 ft. animal bldg. at zoo. $180,000.

PRIME-MOVER M15A FOR BUILDING CONSTRUCTION Places 12 to 17 cu. yds. of concrete per hour on school, hospital and commercial projects — *without* extensive preparations for its use. Runs on same type of ramps, hoists and runways as hand carts. Available with flatbed, or 10 cu. ft. bucket.

M15A

PRIME-MOVER

M30

FOR HIGH VOLUME, LOW COST PLACING OF CONCRETE AND OTHER BULK MATERIALS — USE PRIME-MOVER POWER!

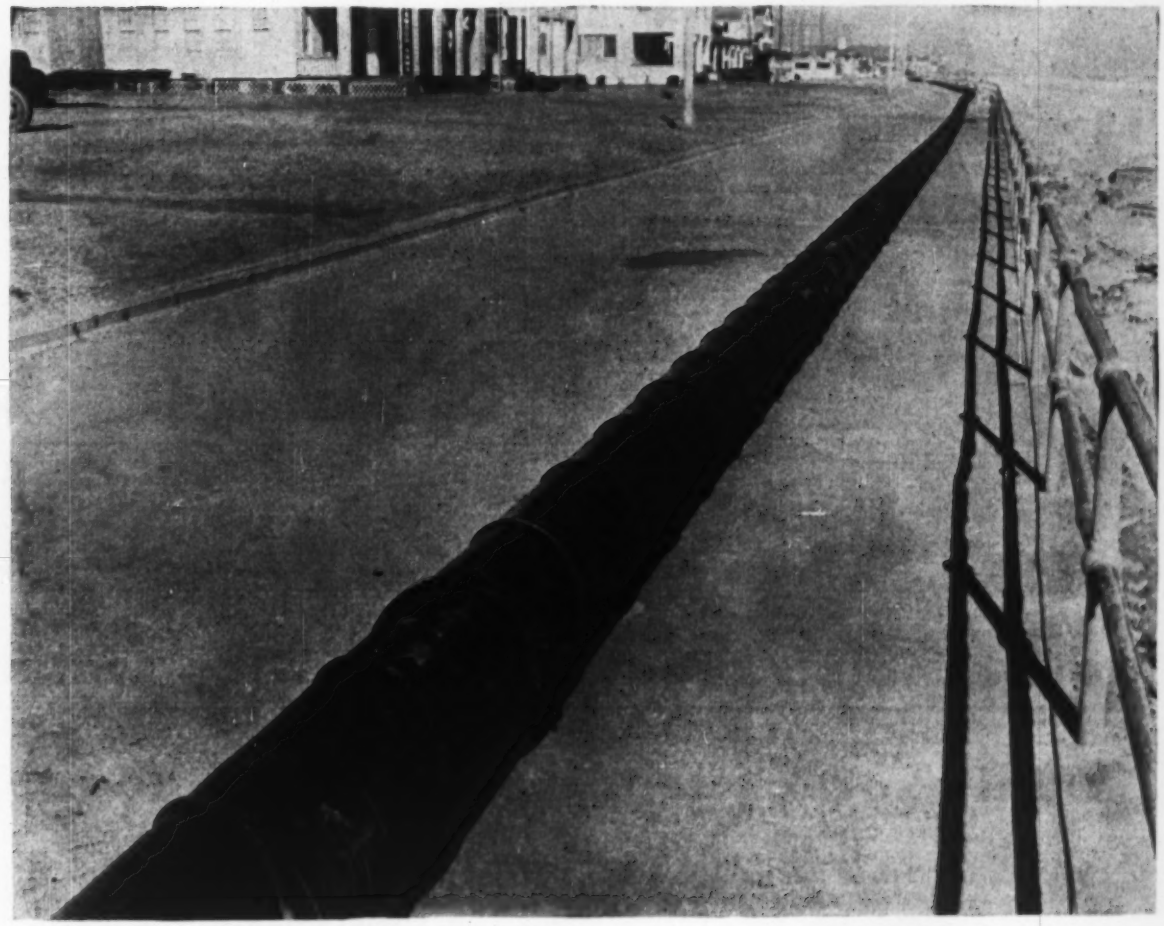
PRIME-MOVER M30 FOR ENGINEERED CONSTRUCTION

Hauls ⅔ yard or 1-½ tons. Unloads transit mixers fast. Spots concrete right where it's needed on plant, warehouse, pier and bridge construction. Hydraulic Torque Converter Drive frees the operator from shifting, clutching and wasted effort. Rugged, dependable. Bucket and flat bed.

FOR COMPLETE DETAILS WRITE TO PRIME-MOVER CO., MUSCATINE, IOWA

USE THIS COMBINATION

To Speed the Job and Cut Costs



Take light-weight Naylor Spiralweld pipe for ease of handling and installation. Join it with the one-piece Naylor Wedgelock coupling for the fastest, simplest connection. The result:—you have a perfect combination in strong, safe, low-cost pipe lines for air, water, dredging, hydraulicking, ventilating and materials handling service.

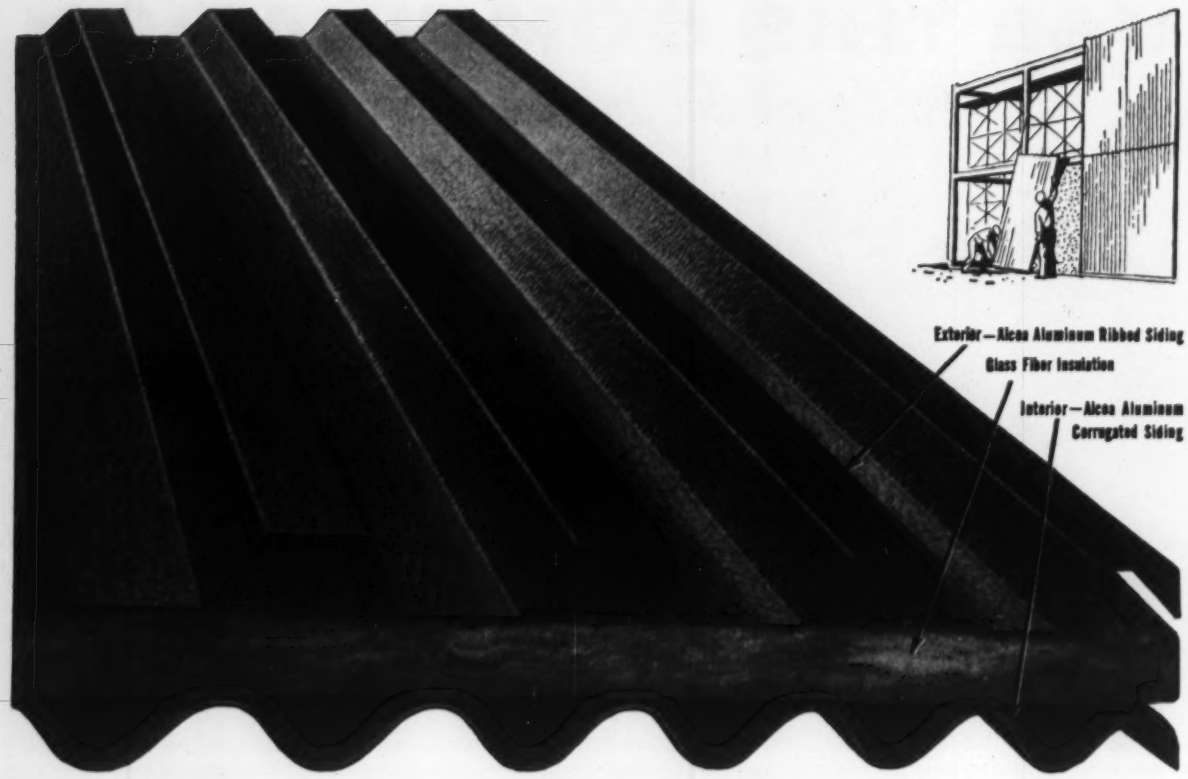
Whatever your job, you can count on dependable performance from Naylor pipe in its full range of diameters from 4 to 30 inches.

For full details, write for Bulletins 507 and 513.

NAYLOR

NAYLOR PIPE COMPANY
1248 East 92nd Street, Chicago 19, Illinois

Eastern U.S. and Foreign Sales Office:
350 Madison Ave., New York 17, New York



Field-erected insulated sandwich walls of ALCOA® ALUMINUM cost averages $1.35 per square foot

With Alcoa Aluminum Industrial Building Products, you can erect walls with a .155 U factor . . . equivalent to three times the insulation value of an 8-inch masonry wall. And the cost will average about $1.35 per square foot.

These walls consist of two sheets of Alcoa Aluminum sandwiching a 1-inch board of glass fiber insulation. Weldable studs can be used to fasten sandwich walls to purlins or girts.

Field-erected, these insulated walls go up faster, with less man power and at lower cost than masonry. Their light weight helps reduce construction costs for steelwork and foundations. They never need painting. Industrial fumes can't hurt them. They're mighty good looking.

If you plan to cool these buildings, you have another important advantage: aluminum's high reflectivity helps keep the inside temperature lower. This means lower cooling costs. In winter, it means lower heating costs.

Alcoa will be glad to put you in touch with selected Alcoa Approved Applicators who offer a complete service in the erection of low-cost aluminum sandwich walls. Just contact the nearest Alcoa sales office, listed under "Aluminum" in your phone book. Or write Aluminum Company of America, 860-C Alcoa Building, Pittsburgh 19, Pa.

THE ALCOA HOUR
TELEVISION'S FINEST LIVE DRAMA
ALTERNATE SUNDAY EVENINGS

Your Guide to the Best in Aluminum Value

ALCOA ALUMINUM
BUILDING SHEET
ALUMINUM COMPANY OF AMERICA

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 18 Connecticut

BUILDINGS—BA

▲ **N. H., Portsmouth**—HOUSING—BA 3/12—Purch. & Contg. Officer, Air Force Base, construct and finance 1,100 family housing units, (Capehart), Portsmouth Air Force Base, IFB 26-605-57-3. $18,000,000. Plans deposit $100. Keohler & Isaak, 1800 Elm St., Manchester, archts. Joseph L. Paley, 105 Newbury St., Boston, Mass., engr. CD 1/31.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 12 Maryland March 22 Pennsylvania

STREETS AND ROADS

March 12 New Jersey March 22 Pennsylvania

▲ **N. J., Jersey City**—BA 3/13—Bd. Freeholders Hudson Co., Court House, bridge between Hoboken and Weehawken at Park Ave. CD 2/19, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—John W. Johnson, supt., Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y.—**Rhodes Construction Co., Inc.**, 833 Front Ave., Salamanca, LB **$305,700.** Est. $313,000. (2 bidders) reconstr. 5 mi. sect. of Scenic Rd. in Allegany State Park, starting at end of Parkway Dr. at Salamanca's south city line and exten. generally southward to Big Red House Rd. at the north end of Red House Lake; existing road will be straightened in some spots widened to a minimum of 20 ft. and resurf. with b. conc., Cattaraugus Co.

N. Y.—**Potter-DeWitt Corp.**, Pavilion, N. Y. LB **$597,670.** Est. $168,000. (2 bidders) wid'n. reconstr. Hunt Rd. (County Rd. 82) from Jamestown's west city line westward to County Rd. 75, distance 4.26 mi., road straightened, widened to a minimum of 24 ft. and resurf. with b. conc., Chautauqua Co.

N. Y.—**Bero Construction Corp.**, 259 Delaware Ave., Buffalo, N. Y. LB **$6,441,677.** Est. $6,442,000. (1 bidder) constr. 1.24 mi. six-lane divided portion of State Thruway's Niagara Section in Buffalo from a point west of Peabody St. to point east of Louisiana St. incl. seven span 576 ft. viaduct over Selkirk St. and four railroad lines, grade separation structures at Smith St., Van Rensselaer St. and Hamburg St. and two other overpasses over railroads, Erie Co.

N. Y.—**Ardor & Booth, Inc.**, 1130 Water St., Watertown, N. Y. LB **$520,544.** Est. $545,000. (2 bidders) relocation, reconstr. 1.02 mi. sect. Rte. 11, bypassing to the north of present Main and Antwerp St., route through Phila. starting at Church St. in Phila., extending northeastward along the same alignment as far as the N. Y. Central R. R. tracks, then on the new alignment across a new 168 ft. long bridge over Indian River and on to rejoin the existing route, new route will have b. conc. pavement 42 ft. wide from Church St. to railroad tracks 36 ft. wide from tracks to the east end of new bridge, 24 ft. wide the rest of the way, Jefferson Co.

N. Y.—**Stento Construction Co., Inc.**, Capital Theatre Bldg., 60 Exchange St., Binghamton, N. Y. LB **$415,382.** Est. $470,000. (7 bidders) constr. 1.81 mi. sect. of Rte. 46 the city of Oneida's "South Hy. Connection" to its urban arterial sys. starting at intersection of Seneca Ave. (Rte. 5) and Main St., short distance west of present Rte. 5-46, intersection and exten. southward toward Munnsville, partly on new alignment as far as Kenwood Ave., route will have 24 ft. wide b. conc. pavement, Madison Co.

N. Y.—**Troy Slag Products Co., Inc.**, Foot of Monroe St., Troy, N. Y. LB **$437,865.** Est. $580,000. (4 bidders) reconstr. 5.94 mi. DeKalb Junction Rensselaer Falls town road, starting at Rensselaer Falls and extending southeastward to Rte. 11 near DeKalb Jct. incl. constr. 100 ft. long concrete bridge over Indian Creek, St. Lawrence Co.

N. Y.—**Hendrickson Bros., Inc.**, 63 No. Central Ave., Valley Stream, N. Y. LB **$397,870.** Est. $507,000. (7 bidders) wid'n. reconstr. 2.26 mi. sect. of Rte. 25 starting at Long Island R. R.'s Laurel overpass and extending eastward through Mattituck to Sunset Rd., widened to a minimum of 24 ft. and resurf. with b. conc. portion through the built-up sect. in Mattituck will be widened to 44 ft., Suffolk Co.

N. Y.—No bids received 2/28/57. Est. $502,000. (bidders) reconstr. 0.96 mi. sect. of Rte. 127 starting at Post Rd. about ½ mi. inside Mamaroneck and extending northeastward to Broadway in Harrison, Westchester Co. Bids Feb. 28. CD 2/4.

BUILDINGS—LB & CA

▲ **360 Lexington Ave. Corp., & 125 E. 40 St. Corp.**, 250 W. 30 St., New York, N.Y. Owner Builds. **$2,500,000.** OFFICE, 354-60 Lexington Ave., NEW YORK, N. Y. CD 11/15.

▲ **H. R. H Constr. Corp.**, 16 W. 46 St., New York 19, N. Y. CA **$4,782,000** (8 bidders) general constr. 5 INFIRMARY BLDGS., KITCHEN BLDG., BLDGS. 12, 14, 16, 17, 26 and 28 at Willowbrook State School, WILLOWBROOK, N. Y. Bureau Contracts & Accounts, The Alfred E. Smith State Office Bldg., Albany, N. Y. CD 1/23, under LB.

Afgo Engineering Corp., 475 Adelphi St., Brooklyn 17, N. Y. CA **$655,000.** (3 bidders.) heating work (Willowbrook, N. Y.).

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 13 Louisiana March 15 Kentucky

STREETS AND ROADS

March 15 Kentucky

BUILDINGS—LB & CA

▲ **Sollitt Constr. Co.**, 301 Columbia St., South Bend, Ind., CA Est. **$58,000,000.** 450,000 kw. steam electric GENERATING UNIT at Philip Sporn power plant, GRAHAM STATION, W. VA. Appalachian Electric Power Co., 40 Franklin Rd., Roanoke, Va. and Ohio Power Co., 301 Cleveland Ave. S. W., Canton, O. CD 11/23, under CA.

▲ **Taylor Constr. Co.**, 2875 N. LeJeune Rd., Miami, Fla., CA **$4,400,000**, HOTEL, 6701 Collins Ave., MIAMI BEACH, FLA. 6701 Collins Ave. Corp., Mr. Sam Cohen, pres., 6345 Collins Ave., Miami Beach, Fla. CD 2/11/57.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 12 Wisconsin March 19 Ohio

March 20 Michigan

STREETS AND ROADS

March 12 Wisconsin March 19 Ohio

March 20 Michigan

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

ISTHC—**Contracting & Material Co.**, 1235 Dodge St., Evanston, Ill., **Kenny Constr. Co.**, 3220 Oakton St., Skokie, and **Louis Garavaglia**, 2424 Mount St., Centerline, Mich. CA **$5,440,000.** Contr. E-2A, grading, drainage, appurtenances, precast concrete and steel bridges 7.93 mi. East-West Route, Cook and DuPage Counties;

ISTHC—**Standard Paving Co.**, 30 N. LaSalle St., Chicago, Ill., and **Peter J. Crowley Co.**, Box 144, Maywood, Ill., CA **$3,547,539.** Contr. N. 3B, grading, drainage, paving, appurtenances, precast concrete bridges 6.12 mi. south of Belvidere, Boone Co. Bids Feb. 14. CD 2/25, under LB.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

E. A. Meyer Constr. Co., 1539 Morrow Ave., North Chicago, Ill. and **Eric Bolander Constr. Co.**, Winchester Rd., Libertyville, Ill., LB **$4,546,998.** Contr. T-13A, grading, draining, paving, appurtenances precast concrete bridges from near Belvidere Rd. N. to Town Line Rd. 4.85 mi. Lake Co. Bids Feb. 21. CD 1/31.

BUILDINGS—LB & CA

▲ **Vernon C. Neil Co.**, 587 Wedgewood Dr., Columbus, O., CA Est. **$3,000,000.** Title I, 35 brick APARTMENTS, Fairwood and Innis Aves., COLUMBUS, O. Harold F. Zieg, 5801 East Town St., Columbus, O.

▲ **Booth & Flinn Co.**, 1942 Forbes St., Pittsburgh, Pa., CA Est. **$58,000,000,** 450,000 kw. Breed POWER PLANT addn., SULLIVAN, IND. Indiana & Michigan Electric Co., 2101 Spy Run Ave., Fort Wayne, Ind.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 19, 20 Texas March 28 Montana

STREETS AND ROADS

March 19, 20 Texas March 28 Montana

HEAVY CONSTRUCTION—LB & CA

▲† **Peter Kiewit Sons Co.**, Sheridan, Wyo. LB **$13,073,582.** (9 bidders) airfield paving and hydrant fueling at Minot Air Force Base, ENG-25-066-57-45, MINOT, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Feb. 21. CD 1/31.

▲ **Donovan Constr. Co.**, 1725 Carroll Ave., St. Paul, Minn., CA **$3,242,000.** constructing, installing roller gates, hoists and cranes, Anzaldduas Dam on Rio Grande River, Spec. AN-6037-A, Vol. 1 and 2, TEXAS International Boundary & Water Comn. of U. S. A. and Mexico, U. S. A. Sect., Box 1859, El Paso, Tex. Bids Jan. 30. CD 2/5, under LB.

▲† **H. B. Zachary Co.**, P. O. Box 2570, San Antonio, Tex., LB **$9,105,948**, est. $9,973,456 Sch. 1; LB **$8,612,456**, est. $9,390,470 Sch. 2; aprons, runways, taxiway paving and refueling Bergstrom Air Force Base, ENG-41-443-57-25, AUSTIN, TEX. U. S. Eng., Box 1600, Fort Worth, Tex. Bids Feb. 26. CD 2/13.

BUILDINGS—LB & CA

▲ **Kleb Investment Co.**, 2116 Swift St., North Kansas City, Mo. Own Forces. **$6,500,000.** fifty 2 story, garden type APARTMENTS, Attacks Housing, Title I, Truman Rd. 18, Woodland and Brooklyn Sts., KANSAS CITY, MO. Robert Erwin, 3836 Main St., Kansas City, Mo., archt.

▲ **Robert E. McKee, Gen. Contractor, Inc.**, 2708 Inwood Rd., Dallas, Tex., CA **$4,000,000.** PLANT, near Richardson. DALLAS, TEX. Texas Instruments, Inc., 6000 Lemmon St., Dallas, Tex. Bids Jan. 13. CD 2/13.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 26 Washington

STREETS AND ROADS

March 14 Nevada March 20, 21, 27 California

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St. Sacramento,

Guy F. Atkinson Co., 10 West Orange Ave., South San Francisco, Calif., CA **$2,695,357** grading, surf. 4.2 mi. Sign Rte. 20 and 3 bridges, Mendocino Co. Bids Feb. 6, awarded Feb. 21. CD 2/13, under LB.

BUILDINGS—LB & CA

▲ **Carl M. Buck**, 8242 W. 3 St., Los Angeles, Calif. LB **$9,434,846.** construct and finance 645 HOUSING UNITS (Capehart). Stead Air Force Base, INV-AF 26-603-57-6, RENO, NEV. Purch. & Contg. Office, Stead Air Force Base, Nev. Bids Feb. 20. CD 1/21.

CANADA

BUILDINGS—BA

▲ **Alta., Calgary** — INSTITUTE — BA 3/28 — Alberta Govt., Parliament Bldgs., Edmonton, 2 story reinf. con. East Block of Institute of Technology and Art, $2,500,000. Plans deposit $100. CD 4/19.

HEAVY CONSTRUCTION—LB & CA

▲ **C. A. Pitts, General Contractor Ltd.**, 30 Commercial Rd., Leaside, Ont., CA **$4,044,270** (5 bidders) excavation in Cornwall Island South Channel in the International Rapids Section of St. Lawrence Seaway, Cornwall, ONTARIO. St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids Jan. 22, awarded Feb. 22. CD 2/4, under LB.

▲ **Dominion Bridge Co. Ltd.**, Lachine, Que., CA **$4,873,780**, superstructures, south of Pier 29, Honore Mercier Bridge extn., Lachine Section of St. Lawrence Seaway, Lachine, QUEBEC, St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Awarded Feb. 22. CD 2/19, under LB.

BUILDINGS—LB & CA

▲ **Redfern Constr. Co. Ltd.**, 36 Toronto St., Toronto, Ont., CA Est. **$4,500,000.** superstructure for 12 story, 64x200 ft. office, University Ave., tower section, TORONTO, ONT. Shell Oil Co. of Canada Ltd., 25 Adelaide St. E., Toronto, Ont. Bids Jan. 9, awarded Feb. 20. CD 12/5.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **Maurice H. Connell & Associates, Inc.**, 315 N.W. 27 Ave., Miami, Fla., U. S. A., CA Est. **$20,000,000.** design and construct, port development, incl. 21 causeway, berthing facilities, warehouses, tank farm, 3 bridges at Caibarien, CUBA. Compania Operadora, Cayo Frances, Caibarien, Cuba.

▲ **VENEZUELA**—Ministerior de Obras Publicas, Direccion de Carreteras, Centro Simon Bolivar, Torre Sur Caracas, D.V., Venezuela,

Venezuela—**Oficina Tecnia Gutierrez & Cia. S.A.** Edificio Luz Electrica, Esquina Urapal, Caracas, D.F. Venezuela, CA **$4,275,370.** 5.6 mi. section of Caracas-Valencia superhighway between kilometers 58 and 67; CA **$4,301,310,** 5.9 mi. section of Caracas-Valencia superhighway between kilometers 74.5 and 84.

Venezuela—**Union de Contratistas, S.A.**, Edificio Norte, Piso 9, Centrao Simon Bolivar, Caracas, D.V., Venezuela, 6.8 mi. section of Caracas-Valencia superhighway between kilometers 4 and 15; CA **$6,398,253,** 5 mi. section of the Caracas-Valencia superhighway between kilometers 26 and 34. Bids Feb. 4, awarded Feb. 15. CD 2/21, under LB.

U. S. POSSESSIONS

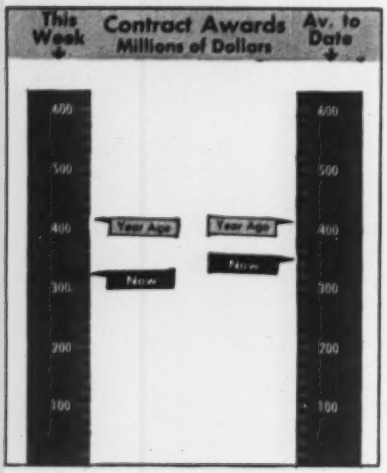
HEAVY CONSTRUCTION—BA

▲† **T. H. Barber's Point**—HANGAR, etc.—BA 3/22—Dist. P. Wks. Office, 14th Naval Dist., P. Wks. Officer, Pearl Harbor, T. H., 100x566 ft. steel, concrete hangar; 110,000 sq. ft. 12 in. rein.-con. cement for parking apron and asph. taxiways, Naval Air Station, NBy 8007, $4,000,000. Plans deposit $110. Extended date. CD 1/30.

(Proposal Advertisement see pp. 151 to 153)

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 10 wks 1957	Chge %
	millions		
Federal	$14.8	$375.4	+5
State and Municipal	147.7	1,289.1	+12
Total Public	162.5	1,664.5	+10
Total Private	157.9	1,755.6	−33
U. S. Total	$320.4	$3,420.1	−17
By Type of Work			
Waterworks	$3.0	$58.0	+15
Sewerage	4.6	75.2	−48
Bridges	11.0	114.8	+8
Highways	66.7	536.8	+31
Earthwork, Waterways	7.7	211.4	+82
Buildings:			
Public, Excl. Housg.	53.3	418.9	+20
Public Housing	0.4	44.4	−51
Private Housing	54.3	594.1	−53
Commercial	57.1	276.8	−39
Industrial	43.2	734.8	−9
Unclassified	19.1	354.9	−1
U. S. Total	$320.4	$3,420.1	−17

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

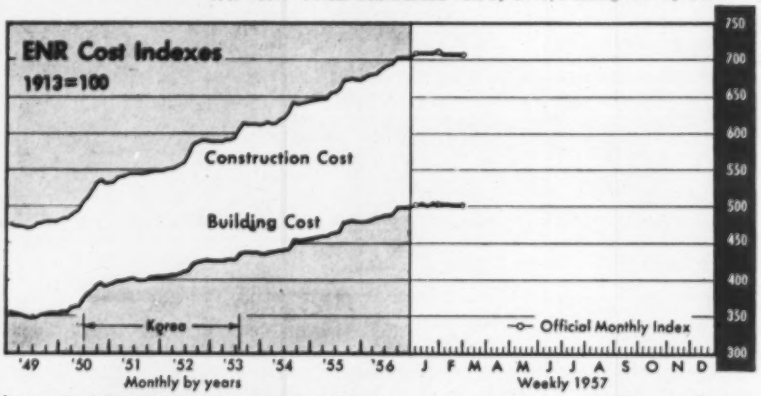
	Week of Feb. 28	Cum. 9 wks 1957	Chge '56-'57 %
	millions		
Corporate Securities	$62.2	$1,043.9	+157
State and Municipal:			
All Except Housing	112.0	911.3	+27
Housing	7.5	24.0	+18
Federal Loans	1.4	19.0	+6
Federal Aid	...	....	...
Total Nonfederal	$183.0	$1,998.1	+71
Federal Appropriations:			
In U. S.	...	....	−100
Outside U. S.	...	....	...
Total New Capital	$183.0	$1,998.1	+67

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of Feb. 28 1957	% Change from Jan. 31 1957	% Change from Mar. 1 1956
Construction Cost	708.64*	−0.2	+4.2
Building Cost	501.37*	−0.2	+3.8

*Official Monthly Index for March 1957

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



WAGE RATES, 20-cities' average	March 1957	% Change from Feb. 1957	% Change from Mar. 1956
Common	$2.220	0	+4.9
Skilled (average 3 building trades)	3.462	+0.1	+4.6
Bricklayers	3.733	0	+4.7
Structural ironworkers	3.452	+0.3	+4.8
Carpenters	3.201	0	+4.3
Equipment operators (average 3 types)	3.107	+0.3	+3.2
MATERIAL PRICES, 20-cities' average			
Structural steel (average 3 mills), per cwt	$5.000	0	+8.7
Lumber, 2x4 fir, per M fbm	115.861	−0.8	−4.4
Lumber, 2x4 pine, per M fbm	101.666	−1.3	−0.4
Cement, bulk, per bbl	3.872	0	+5.1
Sand, per ton	2.450	+0.3	+2.2
Ready-mixed concrete, per cu yd	13.500	+0.1	+2.5
Gypsum Sheathing, ½"x2'x8' per Msf*	62.928	0	+1.9
Fiber board sheathing, ½" sq ed, per Msf*	71.464	+0.2	+3.2
Mineral wool insulation, 3' batts, per Msf*	71.447	0	−2.2
Crushed stone, 1½", per ton, CL	2.813	0	+1.8
Concrete blocks, sand gravel, 8"x8"x16", each*	0.227	0	+2.3
	February 1957	Jan. 1957	Feb. 1956
Brick, common, per M*	$37.388	+0.2	+3.6
Lime, hydrated finishing, per ton, CL	35.593	+0.8	+5.1
Structural clay tile, 3x12x12", per M, 2000 up*	175.950	+0.02	+2.7
Vitrified clay sewer pipe, std. 12", per ft	1.309	+0.8	+8.2
Concrete sewer pipe, 12", per ft*	1.115	+0.3	+6.5

*Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost 1913 = 100	Construction Cost 1949 = 100	Building Cost 1913 = 100	Building Cost 1949 = 100	Volume 1913 = 100	Volume 1949 = 100
1956						
Mar.	680.20	142.59	483.14	137.34	786	227
April	683.28	143.24	485.56	138.02	764	221
May	688.43	144.32	487.36	138.54	684	198
June	692.13	145.09	488.70	138.92	636	184
July	694.75	145.64	489.23	139.07	740	214
Aug	696.31	145.97	491.22	139.63	583	168
Sept.	704.91	147.77	500.10	142.16	580	168
Oct	703.88	147.56	499.54	142.00	729	211
Nov.	704.13	147.61	500.48r	142.27	542	157
Dec	703.82	147.55	500.17	142.18	624	180
1956 Average	**692.37**	**145.14**	**490.76**	**139.50**	**671**	**194**
1957						
Jan.	707.90	148.40	501.96	142.69	504	146
Feb	710.06r	148.85r	502.59r	142.87r	546	158
Mar.	708.64	148.56	501.37	142.52	...	...

r = Revised

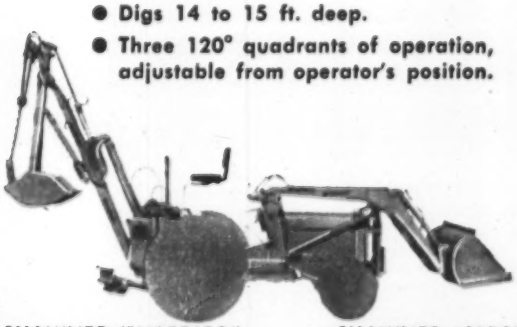
A big step forward in backhoe application...

SHAWNEE "CHIEF" or "WARRIOR"

MOUNTED ON 4 WHEEL DRIVE TRUCK

Sold as a complete unit or for your truck

- "Push-Pull" Power.
- Digs 14 to 15 ft. deep.
- Three 120° quadrants of operation, adjustable from operator's position.
- Hydraulic system driven from separate power take-off from truck transmission.
- Ideal for digging in rough terrain.



SHAWNEE "WARRIOR"
WITH "PUSH-PULL" POWER. Digs 12 ft. deep. Three 120° quadrants of operation, changeable from operators position, totaling 170° range.

SHAWNEE "SPECIAL" LOADER
2,000 pound lift to 9 feet dumping height. Two-pin mounting enables removing or mounting on the tractor in 5 minutes time. Many attachments available.

SHAWNEE "KAW" LOADER
Ten cubic ft. roll-back bucket. Hoists 1250 lbs. to 9 ft. dumping height. Twin, double acting bucket cylinders. Installs or removes in 15 minutes.

SHAWNEE MAKES THE WORLD'S MOST COMPLETE LINE OF LIGHT INDUSTRIAL EARTH-MOVING TRACTOR ATTACHMENTS

886

For Complete Information, write:

SHAWNEE MANUFACTURING COMPANY, INC.
1947-E North Topeka Ave., Topeka, Kansas

Building Contracts Lag, Others Boom

There's a heavy construction boom this year—but not for everyone.

For contractors doing heavy construction work other than building, business is better than ever. Sparked by individual booms in highways, earthwork-irrigation-drainage and waterworks, this broad field of heavy construction is running 16% ahead of last year, the previous record period.

But, for building contractors, the 1957 volume of new business, as reported by ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY, is smaller than it was during early 1956.

The reason is a sharp drop in commercial building and mass housing compared with year-ago totals.

So far in 1957, industrial building contract awards are holding close to the 1956 pace. But during the next two months, it's unlikely that 1957 volume will match the heavy activity witnessed in the same period in 1956. This does not mean that industrial building activity will nosedive in the near future. In fact, if the present trend in such awards is maintained, this will be the second best year on record for industrial building.

On the bright side of the building field, public building contracts are rolling along some 9% ahead of last year's substantial volume.

• **Highway awards strong**—The new federal highway program and the Illinois Toll Road have played major roles in the big upsurge in highway contracts which so far this year have zoomed 37% above 1956.

In one week in February, highway contracts topped the $100 million mark, by far the biggest single week ever recorded for new road awards.

Contract awards for bridges also are up over last year's comparable period, but the 5% rise doesn't come close to the climb in highway awards.

On a percentage basis, the biggest gain over 1956 has been scored by earthwork-irrigation-drainage contracts. The E-I-D category includes dams, rivers and harbors improvement and reclamation projects. This type of heavy construction shot 71% ahead of last year during the first two months of 1957.

Also contributing to the strength of the other-than-buildings category are waterworks, up 9% and private unclassified work, up 39%.

• **February upturn**—On a weekly average basis, total heavy construction contracts turned upward in February, topping January by 8%. Surprisingly, the February upturn was due largely to increased volume of commercial contracts. This rise in commercial work is encouraging, particularly after the exceptionally low January volume.

For the first two months of 1957, heavy construction contract awards total $3.1 billion. Although this is 18% under last year's record high, it remains the second highest January-February total on record.

• **Awards up in three regions**—While total U.S. contracts are down, three regions, the Far West, South and Midwest, have signed up more new business in 1957 than they did in the comparable 1956 period.

The Far West's volume of new contract awards has rocketed 90% above the year-ago period, which puts this region close to the top.

The West of the Mississippi, Middle Atlantic and New England regions have downturns of 52%, 43%, and 14% respectively.

(*B&F continued on page 141*)

Engineering Construction Contracts—February '57

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $344,000.

Four Weeks—Thousands of Dollars (000 Omitted)

	February, 1957							U. S. Cumulative Two Months		% Change	Canada
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1957 (9 weeks)	1956 (8 weeks)	'56 to '57 (Av. Wk.)	February 1957
Public											
Waterworks	385	2,440	1,002	12,046	5,568	17,984	39,425	55,033	44,961	+ 9	2,110
Sewerage	601	2,074	2,346	3,084	3,709	684	12,498	70,495	136,738	−54	955
Bridges	439	4,943	3,093	20,403	7,731	2,251	38,860	102,703	87,218	+ 5	12,979
Earthwork and waterways	614	2,501	1,285	231	20,156	54,870	79,657	203,811	105,730	+71	18,259
Streets and roads	12,131	59,901	25,156	47,955	38,430	20,506	204,079	469,982	304,432	+37	4,410
Public buildings, residential		4,120	1,748	1,720	3,736	460	11,784	44,032	72,863	−46	457
Other public buildings	12,348	41,817	25,303	15,563	24,176	34,277	153,484	365,602	298,839	+ 9	7,495
Unclassified	11,082	9,924	13,210	3,282	18,680	15,399	71,577	190,355	212,628	−20	2,685
Total Public	**37,600**	**127,720**	**73,143**	**104,284**	**122,186**	**146,431**	**611,364**	**1,502,013**	**1,263,409**	**+ 6**	**49,350**
Federal government (included in above classifications)	13,625	8,432	18,848	3,265	37,205	56,093	137,468	360,661	317,412	+ 1	4,570
Private											
Bridges	.....	.....	770	.....	.....	.....	770	1,220	806	+34	.....
Industrial buildings	27,173	19,149	22,384	146,717	53,155	83,127	351,705	691,641	636,209	− 3	86,387
Mass housing	6,172	69,415	25,819	71,861	20,568	18,761	212,596	539,790	989,944	−52	14,187
Commercial buildings	26,483	67,974	14,246	16,499	9,263	8,107	142,572	219,801	390,596	−50	900
Unclassified	.....	.....	2,804	454	2,642	111,137	117,037	145,267	93,062	+39	.....
Total Private	**59,828**	**156,538**	**66,023**	**235,531**	**85,628**	**221,132**	**824,680**	**1,597,739**	**2,110,617**	**−33**	**101,474**
Total Engineering Construction:											
February, 1957—4 weeks	**97,428**	**284,258**	**139,166**	**339,815**	**207,814**	**367,563**	**1,436,044**	.....	.....	....	**150,824**
January, 1957—5 weeks	99,814	393,187	251,071	356,377	262,664	300,595	1,663,708	.....	.....	....	119,682
February, 1956—4 weeks	104,628	401,574	200,233	361,002	528,177	185,575	1,781,189	.....	.....	....	161,765
Two Months—1957	**197,242**	**677,445**	**390,237**	**696,192**	**470,478**	**668,158**	.....	**3,099,752**	.....	**−18**	**270,506**
Two Months—1956	204,834	1,050,895	343,848	588,347	873,692	312,410	.....	.....	3,374,026	....	287,082
% Change '56 to '57 (Avg. Wk.)	−14	−43	+9	+5	−52	+90	.....	.....	.....	.....	−16

now, in industrial tools, too,

Remington,

does toughest cutting jobs easily! gives years of dependable service!

Model 86—*equipped with wrench, steel case, 15 foot cord, plug and ground; AC or DC, 25 to 60 cycle; 115 volt or 230 volt models available.*

Specifications subject to change without notice

Precision-built for superior performance!

Here's a saw that gives you plenty of handling ease and maneuverability. Yes, now you can have portable electric saws by Remington, the newest name in the power tool field and famous for 141 years for quality in sporting firearms and ammunition.

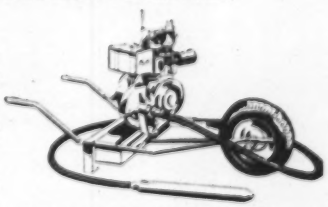
The Model 86 electric saw was made to zip through construction and remodeling work. It comes complete with 8½" blade, saw dust blower and wing nut adjustment. Try it and observe the superior performance you get from the combination rip-cross blade. It was built to make tough jobs easy—as are *all* of Remington's famous Mall electric saws.

There's an electric saw by Mall Tool Company, Division of Remington Arms Company, Inc., for every kind of cutting job—in farming, industry and construction. For additional information, please fill out the convenient coupon.

Remington

Mall® **MALL TOOL COMPANY,**
Division of Remington Arms Company, Inc.

Concrete Vibrator, Model EV25. Lightweight, one-man operation. Universal electric motor, 115 volts, AC-DC, 10,000 vpm.



Concrete Vibrator, Model 7GVW21. 5 hp. gasoline engine. Two heavy duty models —7,000 vpm. and 10,000 vpm.

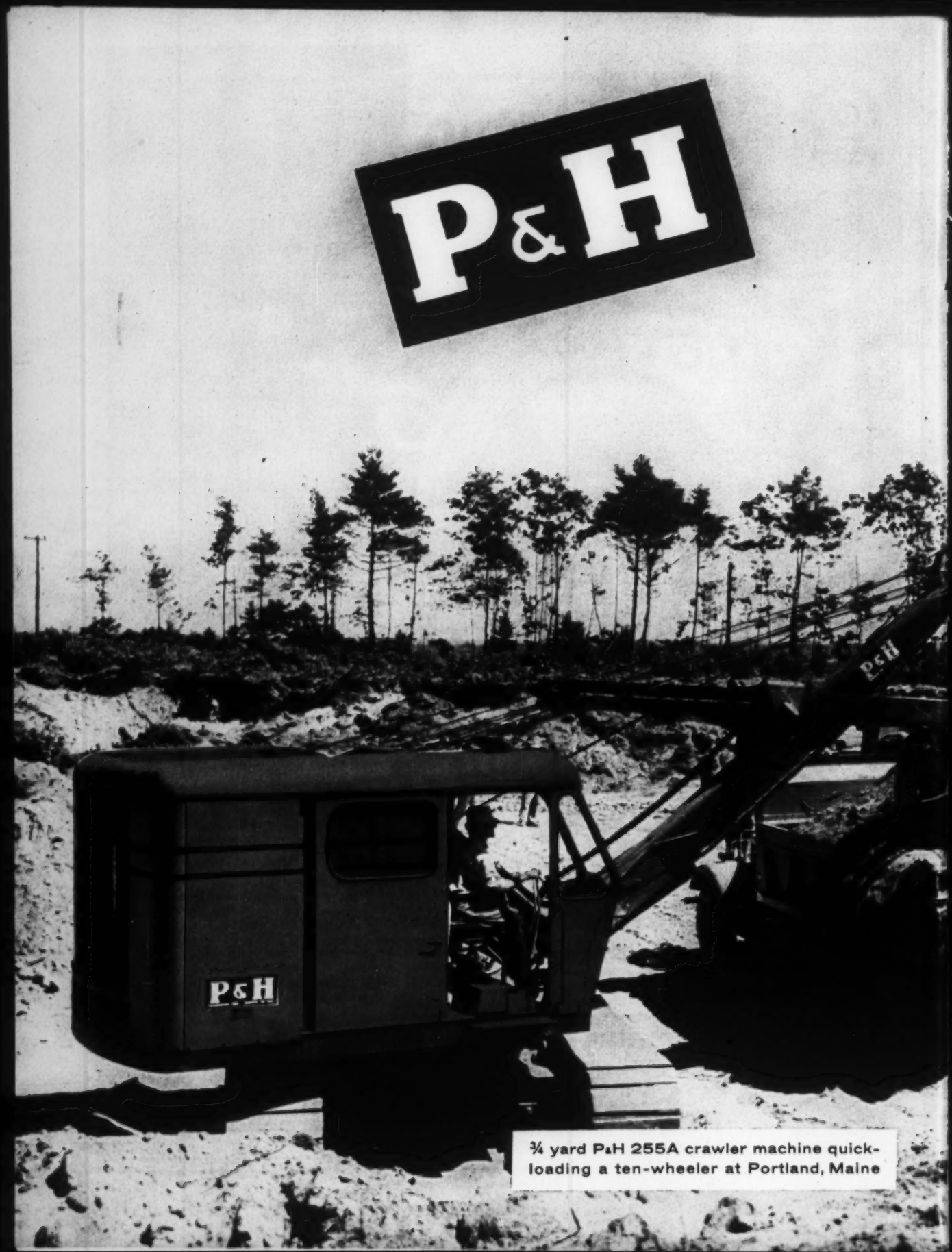
MALL TOOL COMPANY • Division of Remington Arms Company, Inc.
Dept. C31A, 25000 S. Western Ave. · Park Forest, Ill.

Please send free catalog on Construction Tools.

NAME_____

STREET_____

CITY_____ ZONE_____ STATE_____



¾ yard P&H 255A crawler machine quick-loading a ten-wheeler at Portland, Maine

3/4 yd. shovel has a mighty appetite

P&H 255A–first ¾ yd. power shovel--still the leader

P&H was the first to introduce a power shovel in the ¾ yard class and with today's P&H features the 255A continues to lead in profitable performance.

Contractors agree that the 255A with its dependable day-in and day-out production can dig more and lift more—faster and cheaper. In fact, many contractors agree that performance of P&H equipment is the big factor in determining their profits.

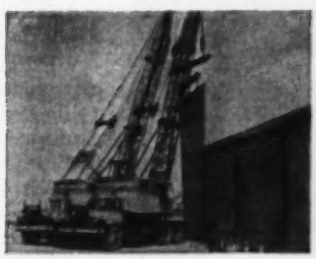
P&H profitable performance comes from a combination of features that are found only in P&H quality equipment. In the 255A you get famous P&H stability through better weight distribution and a low vertical center of gravity. You get smooth, fast, lively swings on the mammoth P&H live roller circle. P&H designed double adjustable hook rollers assure "even keel" swings. The 255A makes maximum use of alloy steel.

Add to these features the fact that equipped with a P&H Diesel Engine with its greater torque you'll get much greater production than with a gas engine. Yes!—this ¾ yard excavator has the mightiest appetite for work—at a potential profit.

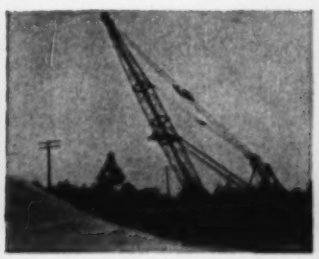
Harnischfeger Corporation
Construction & Mining Division
Milwaukee 46, Wisconsin

THE P&H LINE Truck Cranes: 8, 10, 15, 20, 25, 30, 35 and 45 tons
Shovels: ⅞, ¾, 1½, 1¾, 2½, and 3½ yards

Across the country P&H machines lead the field in power, speed, flexibility, and profitable performance



CALIFORNIA
For handling loads up to 35 tons profitably there is the P&H 555A-TC. Here are Reliance Equipment's two 555A-TC units double lifting a precast concrete panel in the Vail Field Industrial Area, Los Angeles.



LOUISIANA
In the 1½ yard class, Schwartz Supply Co. profits from the lively swings and dependable performance of the P&H 655B. It is shown unloading material for their concrete mixing plant near New Orleans airport.

OHIO
Beavercreek Excavating Co. of Dayton depends on their ½-yard P&H 155A trench hoe to dig water mains and lay pipe economically and at a profit on State Highway 4 project in Butler County.

Write today For Bulletin X-71 On the P&H 255A Fully Convertible Crawler Machine

Harnischfeger Export Corporation, Dept. 509-A
Construction & Mining Division
Milwaukee 46, Wisconsin, U.S.A.

Gentlemen:
Please send me Bulletin X-71 on the ¾ yard P&H 255A

*Name*_____

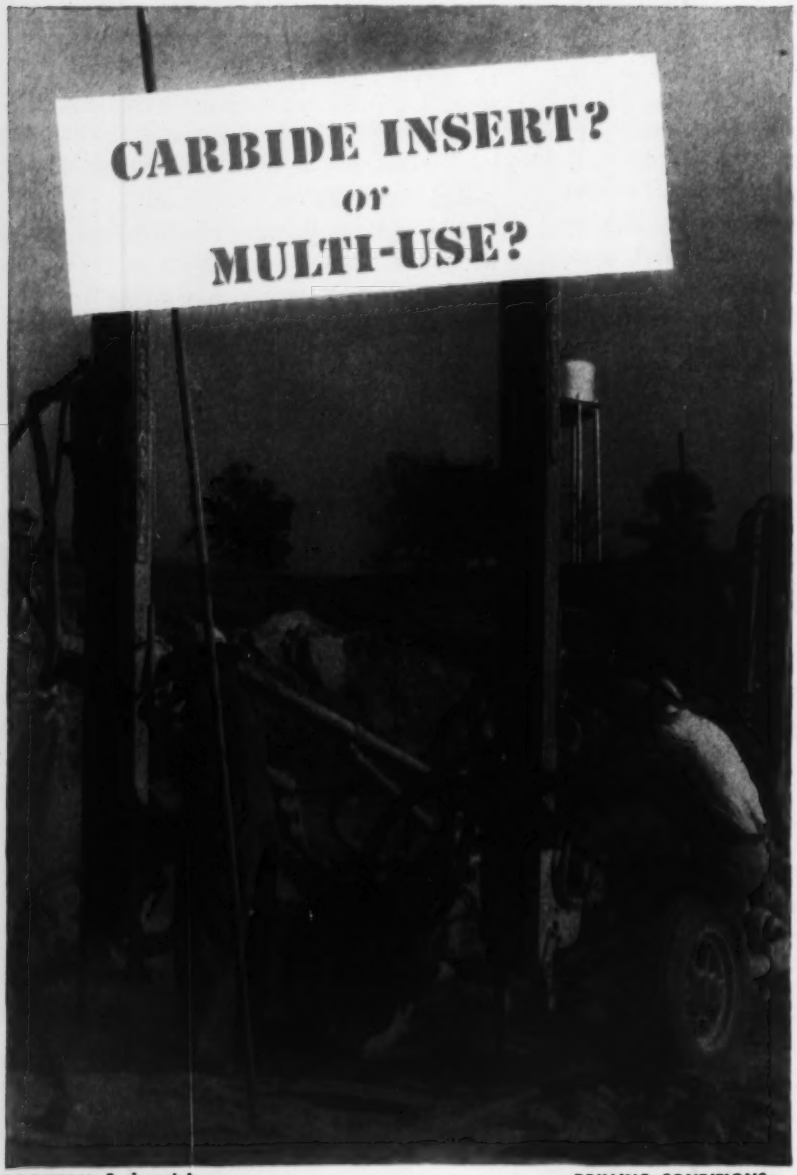
*Title*_____

*Firm*_____

*Street*_____

*City*_____ *Zone*_____ *State*_____

TIMKEN® multi-use bits give Oman Construction Co. lowest cost per foot of hole in drilling limestone



LOCATION: Industrial plant site, Nashville, Tenn.

DRILLING CONDITIONS: Medium hard limestone.

IN wagon drilling limestone on a 232-acre plant site in Nashville, Tennessee, Oman Construction Company got the lowest cost per foot of hole by using Timken® multi-use rock bits.

You can get similar savings with Timken multi-use bits. With correct and controlled reconditioning, they give the lowest cost per foot of hole when full increments of steel can be drilled in ordinary ground.

But multi-use bits may not be best for all drilling conditions. When you drill in hard, abrasive ground, Timken carbide insert bits are your best bet. With them you get higher speeds and greater economy on extremely deep hole, constant-gauge hole or small diameter blast hole work.

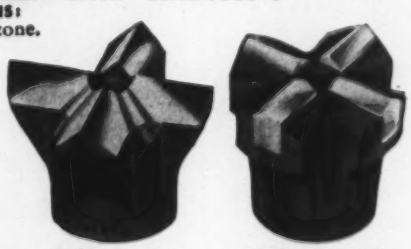
And your drillers save time changing bits when using Timken multi-use and carbide insert bits. They're interchangeable in the same thread series. Dozens of different Timken bits fit the same drill steel. They can be changed quickly and easily as the ground changes. Right on the job.

What's more, Timken rock bits give you these extra advantages: 1) they're made from the Timken Company's own electric furnace fine alloy steel; 2) they have special shoulder unions developed by the Timken Company that protect threads from drilling impact. Let us help you select the best type of bit for your jobs—cut your drilling costs. Write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

your best bet for the best bit for every job



Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

Personnel:

Engineer Shortage: Ask Your Secretaries

Increased engineering productivity through enlightened delegation of non-technical duties to secretaries can be achieved in a relatively painless manner, one construction industry supplier discovered.

Cooper-Bessemer Corp., manufacturer of engines and compressors used in the pipeline industry, petrochemical plants and refineries, attributes much of its improved engineering output to some alert secretaries.

When Secretary Helen Lynde suggested to R. L. Boyer, vice president and chief engineer, that the secretaries could take over a great deal of non-technical, time consuming work being done by the engineers, a meeting of secretaries was scheduled to see if they were willing to assume added responsibilities that would free the engineers for more engineering work.

From the meeting came a list of activities the secretaries felt could be lifted from the engineers' load. And, there also came suggestions about ways engineers could save secretaries' time.

Here are some of the ideas that might be applicable in other firms where executives are searching for ways to make more effective use of each engineer's time and special abilities.

Saving Engineers' Time

• Let your secretary do the filing—don't file in your desk. Indicate special filing when necessary. For routine filing, expect the secretary to set up a system and maintain it in good order. Ask her to make an index of the files; you'll appreciate the saving in time when you need material in a hurry.

• Ask your secretary to start a follow up procedure. This should keep you alerted about deadlines, meetings and due dates for reports.

• Let your secretary open, sort and route mail—and have her attach reference material as needed. If, for example, you receive a letter asking about some details of an engineering report you have prepared, your secretary should make sure that the report and the letter reach your desk simultaneously, ensuring prompt action on your part.

• Ask your secretary to keep a log of incoming mail. This is a check against misrouted mail—or unanswered mail.

• Have your secretary arrange transportation and reservations for you and for your out of town business visitors. There are dozens of time stealing details involved in such dealings. Secretaries, if permitted to make such arrangements on a regular basis soon learn some of the short cuts—and learn your hotel, restaurant and entertainment preferences as well. For visitors, this offers the bonus of good public relations.

• Give your secretary advance warning when you're expecting visitors. She will put your firm's best foot forward by knowing the visitor's name, his company—and what to do in the event that you are not on hand to meet him as soon as he arrives.

• Don't dictate letters when a quick memo will give your secretary all the information she needs to write the reply for you. Whenever possible, let her get the spelling of names, addresses and other details from the letter you are answering. This simplifies the problem of accuracy and eliminates unnecessary slow motion, name spelling dictation.

• Ask your secretary to make up a detailed outline of the work she does for you. When she is ill or on vacation, this outline will be invaluable to her substitute—and to you.

• Expect your secretary to run your office in your absence, and prepare her for the task on a day to day basis over a period of time. Encourage others with whom you work to contact your secretary on routine details with which she is familiar.

Saving Secretaries' Time

These steps will enable the engineer to spend time at engineering tasks by increasing the secretaries' responsibilities. But, the engineers also should take some steps that will save the secretary's time and enable her to handle this increased workload:

• If you place a long distance phone call, or leave a "call back" message, make sure you are available to take the call. If you must go to another office or leave the building, advise your secretary where you can be reached or what message should be relayed.

• Don't engage in long, unnecessary conversations near your secretary's desk, or near other secretaries who are trying to concentrate on their own work.

• Give your secretary any possible information that will help her handle your work more efficiently.

• Assemble reference material you will need before starting to dictate. Speak clearly, don't mumble or talk to the window. Avoid making your letters unnecessarily long. And, avoid old letter writing cliches.

• Dictate replies to urgent letters first, then answer less urgent letters before time forces them onto the "rush list." If possible, dictate **once**, preferably early in the day. This enables the secretary to pace her workload for the day and avoids last minute scrambles.

• Check periodically on a particularly complicated job. It's better to discover errors early in the report than to wait until a lengthy job is finished—and then demand that it be redone. If you know short cuts that can be used on such a job, suggest them.

• Don't let complaints about the secretary's work pile up. Minor transgressions too easily build up into major crimes when lumped together—and only cause resentment.

• Ask your secretary to make suggestions to improve procedures. Often she will be able to see methods that will save considerable time and effort for both you and her.

That's the Cooper-Bessemer formula. The company says it is too early to report any productivity figures. But the engineers involved reportedly are unanimous in their feeling that time available for "engineering" has been increased significantly.

This step, shifting many non-engineering functions to the sub-technician secretarial level, is the forerunner of further developments planned by the company to make the most of each person's special abilities and aptitudes. But it is an important step as one company grapples with the problem of an engineer shortage by more efficiently utilizing the engineers it has.

(*B&F continued on page 144*)

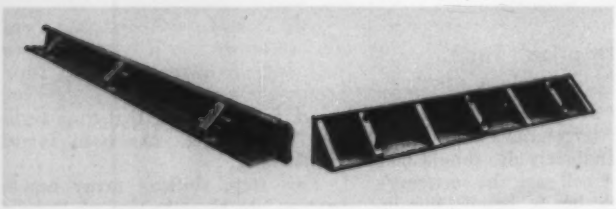
Here's the only Complete Concrete Paving Line with Experience

depend on the BLAW-KNOX "Complete Package" for maximum profit

Only Blaw-Knox Concrete Speaders Spread with a Blade — the NATURAL WAY

Only the Blaw-Knox Concrete Spreader spreads concrete with an automatic transverse Blade — the only *natural way to spread concrete* since it handles even dry, harsh concrete with a minimum of segregation, spreads it evenly no matter where it is dumped on the grade, requires a minimum of operator effort and clears the way for forward motion of the spreader. The Spreader can be set to spread to form level or below form level with or without pre-installed center joint. The automatic reversing action of the spreader blade relieves lateral pressure so alignment of forms is never disturbed.

A vibratory attachment that operates off the spreader power unit can be added that will assure maximum density without segregation, even in dry, harsh concrete. Width of spreader easily adjusted to meet all paving requirements.



Self-Aligning Road and Airport Forms

Setting Blaw-Knox Self-Aligning Paving Forms true to line and grade is a cinch. Look at all the features that save time and money. Double-wedge staking system prevents tipping of forms by crooked stakes. One-piece lock-joint end slides give you fast aligned joints. Buttress-type stake pockets together with over-all sturdy construction of the forms prevent mis-alignment. Road forms are available in heights of 6" or more and Airport forms in heights of 12" or more.

Dependable Blaw-Knox Finisher

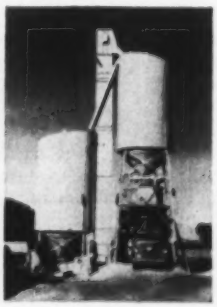
Team-up a Blaw-Knox two-screed Finishing Machine with a Blaw-Knox Spreader and you can handle the output of two dual-drum pavers working at maximum capacity. With this team you will be sure of turning out highest quality finish from harsh, dry concrete. Easily adjusted widths and choice of traction and screed speeds adapt Finisher to fit any paving job.

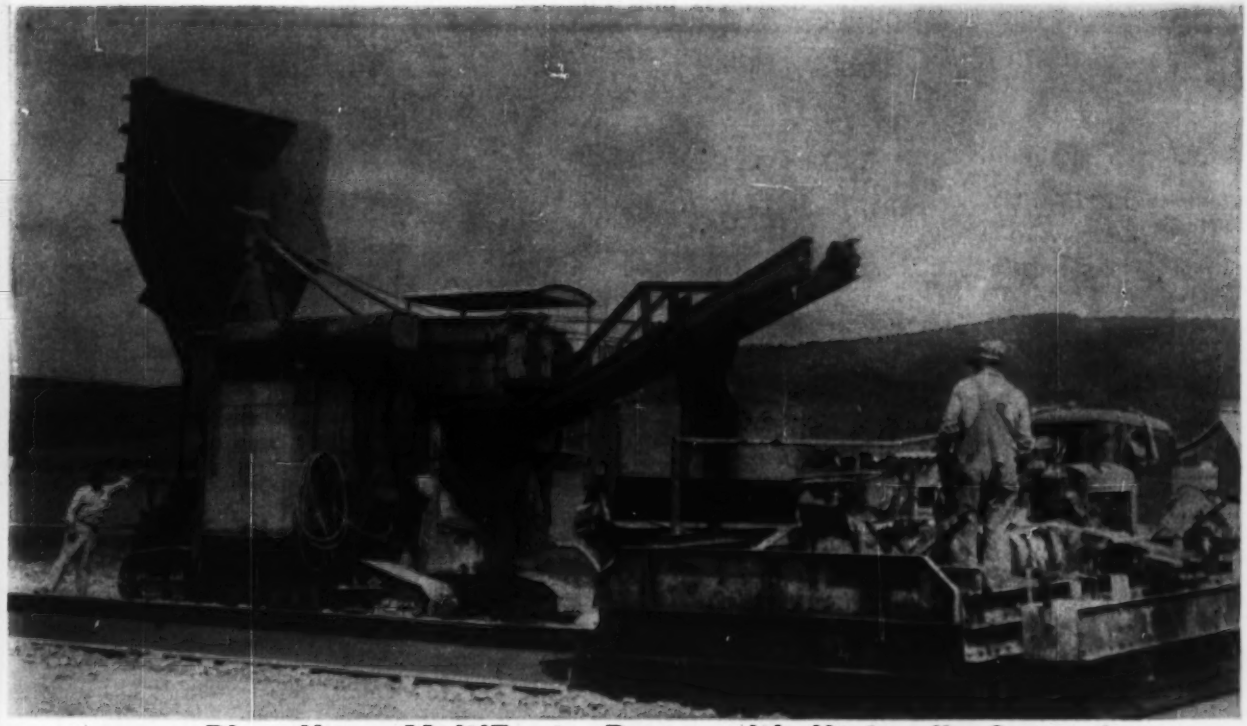
Blaw-Knox Precision Subgrader

Here's the only Subgrader that excavates by vibration — cutting through even the hardest subgrade to produce a perfect grade true to crown and cross-section. Fast and accurate, it produces more work with less power at a lower cost per square yard to assure accurate control of slab thickness to save concrete.

Fast Accurate Batching Plants

Blaw-Knox Aggregate and Cement Bins and Batching equipment are available to match the high capacity of all units in the Blaw-Knox Complete Package of Concrete Paving Equipment. Both Cement and Aggregate Batching Equipment are available with manual, push-button air-operated or automatic controls.





Blaw-Knox MultiFoote Paver with Hydraulic Controls gives you more complete mixing in a shorter Mixing Cycle

You will be sure of higher production for hour-after-hour and day-after-day when you have a Blaw-Knox MultiFoote working in your spread of paving equipment. Faster skip operation gets the batch into the mixer with no loss of time. Hydraulic controls of batch transfer and discharge give immediate response in the automatic cycle. Cone-shaped drums assure you of thorough mixing in a shorter time or more complete mixing in a specified time than is possible in the cylindrical-shaped drum of ordinary mixers. Hydraulic controls for raising and lowering the A-Frame enable the paver to get under overpasses, bridges or other low overhead clearances and at the same time give you the advantages of single-cable skip control with its high speed, simple reeving and low maintenance cost.

These MultiFoote advantages combined with spreading or spotting action of the hydraulic operated bucket and simplicity of Paver design with its get-at-ability and freedom from excessive number of parts assure better day-after-day performance with lower maintenance costs. MultiFoote Pavers are available as single or double drum models in the 34E size.

All "Complete Package" Paving Equipment Job-Proved

Blaw-Knox "Complete Package" Paving equipment has become the first choice of contractors throughout the country. Contractors with a spread of Blaw-Knox equipment know that they can depend on its many tested and proved design features plus one distributor source for parts and service to keep their jobs on schedule. If you are planning to bid on concrete paving, plan to use the only line of equipment with experience—see your nearest Blaw-Knox Distributor today.

For more information on any of these units send for the following bulletins by number — MultiFoote, No. 2616; Road Forms, No. 2370; Finisher, No. 2517; Subgrader, No. 2227-R; Batch Plants, No. 2488; Spreader, No. 2485.

BLAW-KNOX

BLAW-KNOX COMPANY

Construction Equipment Division

41 Charleston Ave., Mattoon, Illinois

Materials Centers

San Francisco experiment to be tried nationally

After more than 18 months of pilot operation, San Francisco's Construction Materials Center (COMAC) has decided to set up a nationwide chain of centers that will act as clearing houses for information on building products.

The new centers will offer a variety of services intended to help builders, architects and home owners choose construction materials.

Construction has started on centers in Los Angeles, Dallas and New Orleans; a new and larger center (14,000 sq ft) will be in operation in San Francisco by the end of this month.

COMAC expects to have centers in operation in 18 cities by the end of this year, according to Vincent M. di Suvero, owner and director. The centers will be capitalized at $100,000 each, and will be operated under a franchise system.

COMAC is supported by manufacturers who pay $300 to $1,000 a year (per location) to have their products displayed and to take advantage of certain other services offered by the center.

Products exhibited are not limited to those of the exhibitors, however. There is a new product room in which the center displays newly introduced materials. If the visitor desires information on a material not on display, the center will procure it for him.

The center works with the manufacturer on his display. Products often are displayed in actual use: doors, wall coverings, windows, lighting, and other items are incorporated into offices at the center or model rooms.

The center does not limit its information to the manufacturer's promotional literature. It files a specification sheet for every product it displays.

These specifications are checked by representatives of the American Institute of Architects and the Construction Specification Institute to make sure they have adequate information.

Costs Dip Slightly

Indexes edge downward as lumber prices sag

Construction costs dipped a slight 0.2% this month because of sagging lumber prices.

ENGINEERING NEWS-RECORD's national price average for Douglas fir 2x4's declined 0.8% while the southern pine 2x4 price average dropped 1.3%.

These lumber declines offset most of the December-January rise in the cost indexes caused by higher freight rates.

ENR's 20-Cities Construction Cost Index for March is 708.64, just 0.2% under the record high of 710.06 posted in February. The ENR Building Cost Index for March is 501.37, also down 0.2% from the high reached in January. Both indexes are based on 1913 = 100.

For the first three months of this year, costs have advanced more slowly than during the same period of 1956. The March Construction Cost Index reading is 0.4% higher than it was at the end of 1956. This compares with a rise of 0.6% in the corresponding period last year.

On the same basis, the Building Cost Index has increased only 0.3% this year as against a rise of 0.6% in the comparable 1956 period.

While costs are not climbing as fast now as they did a year ago, they are close to record levels—and they are about 4% higher than a year ago. The Construction Cost Index now is 4.2% above the year-ago value, while the Building Cost Index is up 3.8%.

Work to Start in Spring On 750 Mile Oil Pipe Line

Construction is expected to start in April on a $50 million pipe line to run from the Four Corners area of Utah to Los Angeles.

Contractor is the newly organized Four Corners Pipe Line Co., owned jointly by Continental Pipe Line Co., Gulf Oil Corp., Richfield Oil Corp., Shell Oil Co., Standard Oil of California and Superior Oil Co.

Initial capacity of the line will be 60,000 barrels a day and this might be boosted to as much as 160,000 barrels. Including feeder lines to other fields in Utah and New Mexico, the 16 in. dia line will be 750 miles long.

Construction Markets

Pittsburgh: An On-the-Spot Report

High interest rates more than likely will take their toll along the way, but heavy construction in western Pennsylvania still is looking confidently to a booming, possibly near record 1957.

Other variables being watched closely are the weather, the labor supply, and steel supply. Last year, the weather was a serious factor for construction. A goodly share of some $300 million in non-residential construction now flowing over the architects' boards represent a carryover from 1956. Steel, too, is giving contractors trouble although other building materials appear to be plentiful. The possibility of a labor shortage developing is also a negative factor for 1957.

Allegheny County (Pittsburgh) furnishes one example of the tight money situation. County commissioners are expecting to hold back on projects requiring bond issues because of the rising interest rate. More than likely this will result in a delay of the county's annual public works bond issue, which usually runs from $4 to $6 million.

The City of Pittsburgh, on the other hand, expects to proceed with improvement work costing slightly more than $8 million this year. Despite tight money, the city's "name" enables it to borrow money cheaper than most municipalities. The city, however, has not yet reached agreement on whether to proceed with a $43 million capital improvement program, approval for which was given by the voters in a special election last year.

These are some of the major projects coming up in 1957:

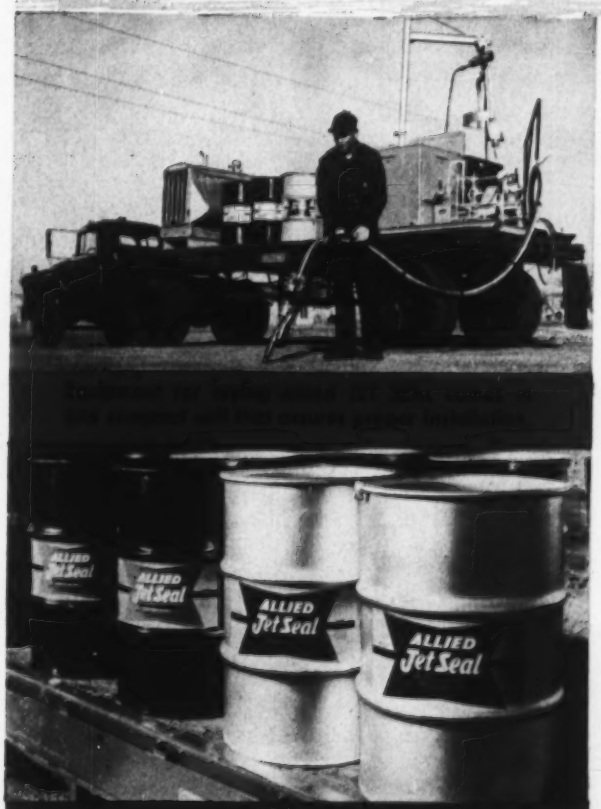
On March 1, the state received bids on the Fort Pitt Tunnel, two 3,600-ft tubes to carry Penn-Lincoln Parkway traffic through Mount Washington at Pittsburgh. Expected cost is $17 million.

Expected to go under construction this year is a 23-story, $15 million Hilton hotel for Pittsburgh's Gateway Center. Hilton hopes to advertise for bids on the 800-room structure in April or May.

Depending on demands for office space, the Equitable Life Assurance Society may begin work this year on a 15 to 22 story office building also for Pittsburgh's Gateway Center. Cost would run from $9 to $12 million.

And, in December 1956, the state announced plans to spend $63 million on highway work in Western Pennsylvania during the three years beginning Jan. 1, 1957. Earmarked for this year is more than $31 million, part of which would go into the Fort Pitt Tunnel.

New York State Thruway Uses ALLIED Jet Seal



The New York State Thruway is one of the most modern and up-to-date traffic arteries in the world. It now stretches 427 miles from New York City to Buffalo and is being extended five ways —to Erie, to Niagara Falls, to Massachusetts, to Connecticut and New Jersey.

To protect the tremendous investment in this beautiful highway, the Thruway Authority seeks only the best materials for construction and maintenance. Here, Allied JET SEAL has won distinction as the preferred sealant for protecting the more than 500 bridges on the super-highway.

Allied JET SEAL is outstanding for its extreme ruggedness, superior adhesion, cohesion and low temperature ductility. Allied JET SEAL has no cold flow tendencies even above 300°. It is easily applied, sets up quickly, and is ready for traffic with minimum delay. The Thruway Authority believes that its greater life expectancy makes it more economical, in the long run, than the less effective sealants it is destined to replace.

ALLIED MATERIALS CORP.

PRODUCERS, REFINERS AND COMPOUNDERS FOR OVER 25 YEARS

ahoma City, Okla., Phone RE 9-0592
t, Mich.—Los Angeles, Cal.—
tford, Ontario (Canada)

Shovel-loading big-chunk rock into Dumptor — square body opening provides 64 square feet of target for easy loading over the side, or either end. It's the heavy-duty hauling unit with a ton of strength for every ton of payload capacity!

Plenty of power on the haul — (check high ratio of H.P.-to-loaded-weight in Dumptor story on next page). Dumptor also travels at same speeds in either direction for fast, no-turn shuttle hauling.

One-second gravity-dump speeds haul cycles. Dumptor has no troublesome body hoist, no hoist maintenance. Gravity-dump never balks, and never wears out.

IN ROCK LIKE THIS

you need Dumptors

When you are loading 1½ to 2½ yards of rock at a single pass, hauling units need plenty of strength to last. With Koehring heavy-duty Dumptor, there's a ton of strength for every ton of payload capacity. *It's built for rock.* Sides and ends of all-welded 6-yard body are heavily rib-reinforced. Double-plate bottom, lined with multiple steel beams, cushions the shocks of rock loading. Bolted or free-swinging kick-out pan adds another ½" steel plate to Dumptor bottom for extra strength.

There's plenty of strength, too, in the heavily-trussed chassis to take constant pounding of heavy loading and rough, off-road hauling. What's more, Dumptor has no leaf springs — just one big snubber-type chassis spring on the steering axle — none on the drive axle. Big drive tires eliminate the need for more springs, absorb loading and hauling shocks — save spring maintenance.

Even with all this heavy-duty strength, Koehring Dumptor® still has more than 6 H.P. for every ton of loaded weight. It accelerates fast, pulls through soft ground with less shifting, climbs 24% grades fully loaded. If you have a tough hauling problem, see your Koehring distributor about this heavy-duty 6-yard Dumptor. Why not call him now?

KOEHRING COMPANY

MILWAUKEE 16 WISCONSIN
CX642

Subsidiaries: JOHNSON PARSONS KWIK-MIX

Digs within 12 inches of side obstructions

Off-set digging boom on Parsons 250 Trenchliner® puts trench within 12 inches of curbs, poles, buildings — digs almost directly behind either crawler. Reversible conveyor shifts through machine by power in less than 1 minute, discharges right or left. 250 production capacity: 3½ inches to 9¾ feet per minute. Widths: 16 to 42 inches. Depths to 12½ feet. Four other Parsons Trenchliners are also available in all sizes and types.

PARSONS • Newton, Iowa
(Koehring Subsidiary)

Portable, easy-charging 3½-S Dandie® mixer

With this Kwik-Mix ½-bag concrete mixer, charging height is low, only 43 inches. Convenient end-discharge, easy tilting drum, and unobstructed spotting area speed loading into wheelbarrows. Push down tow-pole gives safe, 1-man handling on the job, is easily hitched for trailing. Other models: side-discharge tilter, end-discharge non-tilt. Other concrete mixer sizes up to 16-S. Also: plaster-mortar, bituminous mixers and Moto-Bugs®.

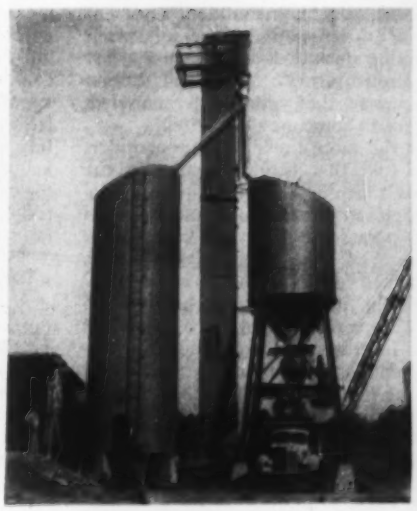
KWIK-MIX • Port Washington, Wis.
(Koehring Subsidiary)

254 to 1321-barrel bulk cement plants

Easy to ship, simple to erect and re-assemble at next site, Johnson silos are all-welded in one piece, 11 or 12 ft. diameter. Single silo capacities: 254 to 611 bbls. Has screw conveyor, bucket elevator, receiving hopper, one or two 1,000-lb. batchers. Larger batcher, extra leg and elevator height available for charging mix trucks. Second silo at ground level increases total plant storage capacity up to 1321 bbls. of cement.

C. S. JOHNSON • Champaign, Ill.
(Koehring Subsidiary)

V69



Homebuilders Face a Complex Challenge

Joint bargaining and recognition as separate industry may hold solution to major labor problems

Meeting in Washington, D. C., last week to take a look at some of their labor problems, leading homebuilders from across the nation saw as one of their biggest challenges the task of achieving an effective voice in collective bargaining.

The conference—most comprehensive of its kind ever held in the homebuilding industry—was convened in the National Housing Center. The agenda was prepared by the Labor Relations Committee of the National Association of Home Builders. Two-fold purpose of the conference, in which representatives of government, labor and allied industries participated, was to seek a better understanding of the specialized problems of homebuilders and to explore suggestions for their solution.

Perhaps the most significant conclusion to emerge from the conference was this: The frequent inability of homebuilders to bargain as an individual group, stemming in part from a general failure to regard them as members of a distinct and separate industry, presents a compelling need to analyze and review the problems and pitfalls of multi-employer and area bargaining, and of their community of interest with subcontractors and those in allied industries. Joint bargaining seemed to suggest itself as the best solution to the problem. Without it, this rather strange anomaly may continue: Despite the fact that homebuilders represent one of the nation's major industries, operating in nearly every community and furnishing two and a half million jobs a year, they often find themselves the tail to someone else's kite.

At the same time, the homebuilders were told that future changes in the nation's population will require an increasing emphasis on employment of women and older workers and on the training of new recruits. Wage-wise, it looked as if settlements in 1957 would be in the neighborhood of 15 to 17½ cents an hour, as deferred wage increases under existing contracts coupled with an expected rise in the cost of living outline a general pattern for future wage demands.

Boyd Leedom, Chairman of the National Labor Relations Board; Rocco C. Siciliano, Assistant U.S. Secretary of Labor; Richard Gray, President of the AFL-CIO Building and Construction Trades Department; and John T. Dunlop, Chairman of the National Joint Board for the Settlement of Jurisdictional Disputes, were among those who participated in various phases of the conference.

• **Manpower**—The next 10 years, according to Siciliano, will add another 10 million members to our labor force, with a continuing and persistent increase in the skilled groups, both numerically and proportionately. But, significantly, only half a million of these will be in the 25-44 age group, 4.5 million will be between 14 and 24; 5 million will be over 45; over half the 10 million will be women; and the number of workers in the critical age group of 25 to 34 will decline by 700,000. Population shifts from rural to urban areas sharpen competition for skilled workers.

Result, he said, will be that employment prejudices based on age, sex and race will no longer be feasible and the burden on labor and management to train new recruits will increase.

NAHB has already taken steps to generate greater homebuilder interest in apprentice training, NAHB Labor Director Andrew Murphy noted. The association, he said, is represented on a number of local Joint Apprenticeship Committees, although it presently has no representation on any national JAC nor on the national committee for the construction industry. It has a monthly apprenticeship newsletter and has launched a pilot program, in cooperation with the U.S. Employment Service, in Contra Costa County, Calif., to counsel high school students in career opportunities offered by the homebuilding industry.

• **Bargaining**—But the shortcomings of existing collective bargaining procedures presented a far more perplexing problem, the scope of which was reflected in questions such as these: If homebuilders in an area are organized but the unions refuse to deal with them, what can be done? If homebuilders are willing to join general contractors for collective bargaining purposes but the generals refuse, are the homebuilders stymied? If homebuilders have achieved independent bargaining, how can they keep defecting members in line? Is an association member bound by the collective bargaining results of its association? Can an association lawfully engage in a lockout? How can an association gain the legal right to negotiate on its own? Can an industry promotion fund be lawfully collected from both employers and employees and must the fund be jointly administered? What are the respective collective bargaining rights of homebuilders and of their subcontractors? Is area-wide bargaining desirable? Should collective bargaining activities of homebuilders and members of allied industries be coordinated?

No definitive answers were found but both Gray and Dunlop suggested the solutions would be found, not in the law, but in joint exploration of the problems—a mutual exchange of ideas and suggestions not only between homebuilders and labor, but also between homebuilders, their subcontractors, general contractors and employers in related industries, such as sand and gravel, concrete, trucking and building supply manufacturers.

And in the eyes of some, including Dunlop, the most sensible approach lies perhaps in the field of joint bargaining, where the special problems of homebuilders and general and specialty contractors are recognized and in which all have an effective voice.

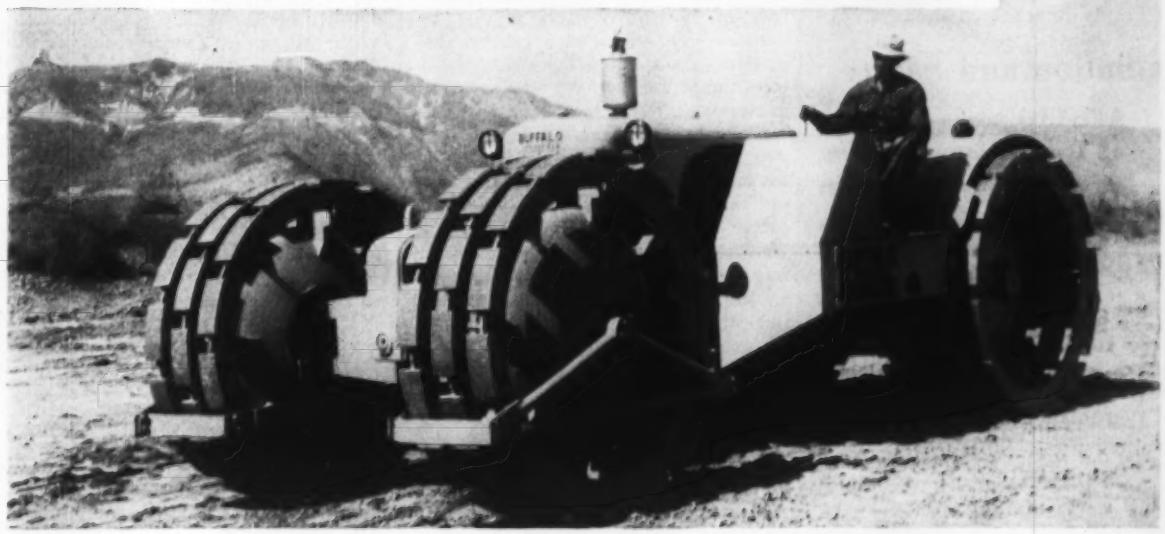
• **Wages**—In the midst of a collective bargaining situation which many homebuilders feel they are not equipped to handle, the industry seems to be faced with contract settlements that will average 15 cents or more an hour in basic rates this year.

The wage prospects were outlined by staff members of the Bureau of National Affairs, who pointed to three principal factors that will tend to achieve this new general construction industry wage level: a high level of business activity; the possibility of another 2% rise in the cost of living; and deferred wage increases due this year under existing contracts.

Demands for fringe benefits are expected to continue, with emphasis on "catching up" with others rather than on extensions to new fields.

Here the troublesome question was

K-45 Kompactor compacts California 399



for Guy F. Atkinson Company on $1,736,000 Ventura-to-Ojai highway construction job

To meet density specifications and *speed* compaction, Guy F. Atkinson Company of South San Francisco, California, uses the Buffalo-Springfield K-45 Kompactor on this project between Ventura and Ojai, California.

Material before compaction on the Ventura-Ojai highway job. (Pack of cigarettes shows comparative size.)

After 3 passes by the K-45 Kompactor. Note surface uniformity. (Cigarette pack for comparison.) Density specifications also have been met in record time.

Operating at *fast* speeds, 4 to 5 mph, the self-propelled, highly maneuverable K-45 cuts compaction time substantially from that normally required. It further shortens time by giving compaction to meet specified densities with *fewer* passes.

The K-45's "Interrupted Pressure Principle" design places heavy steel pads in staggered rows around each of 4 large diameter wheels. *All* compaction effort is directed downward with minimum displacement on entering and leaving the compacted area . . . gives a better finished surface.

Send now for Bulletin S-64854. See your nearest Buffalo-Springfield distributor for a demonstration on the job.

The Standard *of Comparison*

BUFFALO-SPRINGFIELD ROLLER COMPANY

Division of Koehring Company

SPRINGFIELD, OHIO

to what extent homebuilders could expect to establish or to maintain wage differentials for workers in their industry, based in part on the opportunity of steadier employment. And the feeling, again, was strong that homebuilders more sensitive to consumer resistance to high prices, should seek more actively to divorce themselves, in the minds of labor and the public, from the rest of the construction industry.

Radiation and Safety

AFL-CIO seeks adoption of federal laws covering safety and compensation

Two members of Congress—Senator Clinton P. Anderson and Congressman Chet Holifield—have commended three AFL-CIO unions for publicly questioning the propriety of the permit issued by the Atomic Energy Commission for construction of a fast breeder power reactor near Monroe, Mich. The health and safety questions involved, Anderson said, demand that the AEC make available to the public maximum information on all proposed reactors.

The commendations were made last week at a conference on atomic radiation hazards called in Washington, D. C., by the AFL-CIO to explore the real and imaginary dangers that accompany peaceful applications of atomic energy, including the multi-million-dollar industrial use of radio-isotopes for thickness and density gauging, radiography and other uses.

For several months, a controversy over the Monroe reactor has pinpointed part of the issue with which the AFL-CIO is concerned, as well as some of its implications for the construction industry, for the general public and for the nation in its efforts to maintain its role as a world leader.

Over protests of the Monroe Building and Construction Trades Council —the jobs of some of whose members were at stake—the auto worker, paper worker and electrical worker (IUE) unions charged the AEC with violation of its own safety regulations in issuing the Monroe permit and have succeeded in forcing the AEC to hold its first public hearing, now in progress, on the licensing of reactors, which are regarded as the "big" industrial development for nuclear energy.

The unions assert that they seek to foster, not obstruct, the rapid development of our atomic energy program but contend the fastest progress in the long run can come only from orderly procedures based on thorough recognition and analysis of attendant hazards and use of adequate and proper safeguards.

Basic purpose of the AFL-CIO conference was to start the ball rolling in that direction and to arouse public discussion and action on some of the numerous problems, including legislative adoption of a rigid safety code and revisions in the workmen's compensation system to assure medical care and compensation to workers injured by radiation, the effects of which are still mysterious and often delayed well beyond the periods now provided in many existing statutes of limitations.

Though contractors in initial construction of nuclear installations prior to the time they become critical are not directly touched by the problems, except as citizens and taxpayers, those who later engage in maintenance and repair work will be as deeply involved as the operators themselves. As the nuclear program develops, for instance, it's expected that generating industries will follow the current practice of having major alterations and repairs done by outside contractors and minor ones by their own employees. Among the latter will be many from the AFL-CIO building trades unions.

There's no reason to fear radiation, nuclear experts at the conference indicated, if the facilities using radioactive materials are well designed, if proper shielding is used and if adequate safety measures and precautions are adopted. But the AFL-CIO looks at the bigness of the "ifs" and distrusts the inclination of private industry, as it moves into the field, to adhere to the standards of the AEC itself has used in its own installations. In order to lock the door before the horse is stolen, it proposes to work in two directions—in collective bargaining for a new approach to safety, and in the legislative field at the national level for a rigid safety code and for an adequate system of compensation.

Detroit Union Sets Pace With 32 Cent Pay Demand

Substantial wage increases are in the making for some 75,000 building tradesmen in the Detroit area this spring.

Cement finishers are expected to demand a package increase of 32 cents an hour, setting the pace for several trades that will be negotiating, while members of other unions will receive deferred wage increases under existing contracts.

Up for negotiation this spring are new contracts for the painters, bricklayers, operating engineers, laborers, electrical workers, sheetmetal workers and plumbers. Union leaders in this group indicate they will press for demands equal to those of the cement finishers—about 32 cents an hour.

Largest of the unions slated for deferred wage boosts is the carpenters union, whose members will receive a 5 cent increase (from $3.20 to $3.25) in their basic rate plus a 10 cent contribution for a pension fund to be established by May 1. Should agreement fail to be reached on the details of the fund, the pension fund contribution will be applied to the basic rate.

Other unions that still have a year to go under existing contracts are ornamental and structural iron workers, who are scheduled to get a 12.5 cent hourly wage boost this year; reinforced concrete iron workers, slated for a 15 cent pay boost; and teamsters, whose members will get a 6 cent increase plus a pension fund contribution.

Wyoming Revisions

Disaster insurance plan amends compensation law

Four major pieces of labor legislation, including a disaster reinsurance plan for small employers, have been passed by the Wyoming legislature this year.

Under one of the bills, out-of-state employers will be required to post a $1,000 bond to guarantee payment of state taxes and employees' wages and salaries. The original bill, later amended in the Senate, called for a $1,000 bond for each employee, up to a maximum of $5,000.

The disaster reinsurance plan, provided for in another bill, relates to the state's workmen's compensation law and will apply to employers whose payrolls are under $100,000 a year. These employers will contribute an additional one-half of one percent of their payrolls to the disaster fund. The fund will be used when fatal or serious accidents occur among employees of these employers so that the employers' contribution of the maximum 4½% to the workmen's compensation fund will be postponed. The special contribution will later drop to one-fourth of one percent and, when the balance in the disaster fund exceeds $350,000, the rate will be lowered to one-eighth of one percent.

The other bills increase workmen's compensation benefits about 10% in most cases, and authorize the labor commissioner to institute suits on behalf of employees for recovery of back-pay under the state's minimum wage law.

OFFICIAL PROPOSALS

Bids: March 13, 1957

Washington Suburban Sanitary Commission

CONTRACT NO. 1955-W
FURNISHING AND DELIVERING
CAST IRON WATER PRESSURE PIPE

Sealed proposals for furnishing and delivering five-thousand (5,000) lineal feet of 3-inch; thirty-five thousand (35,000) lineal feet of 6-inch; fifty-thousand (50,000) lineal feet of 8-inch Class 22 unlined; two-thousand (2,000) lineal feet of 10-inch Class 23 Cement Lined; two-thousand-five-hundred (2,500) lineal feet of 16-inch Class 25 Cement Lined and one-thousand-five-hundred (1,500) lineal feet 20-inch Class 24 Cement lined Cast Iron Mechanical Joint Pipe. Alternate bids on the 6-inch and 8-inch pipe will be received on "Tyton" Joint Cast Iron Pipe, all complete with accessories, will be received in the office of the Purchasing Agent, Room G-13, of the Washington Suburban Sanitary Commission, 4017 Hamilton Street, Hyattsville, Maryland until Wednesday, March 13, 1957 at 10:30 A. M., Eastern Standard Time, at which time and place they will be publicly opened and read.

Specifications may be obtained from S. Z. Salsberry, Purchasing Agent of the Commission.

T. Earle Bourne, Chairman
Frank L. Hewitt, Jr. V-Chairman
J. Norman Ager
James B. Bland
Willard A. Morris
L. S. Ray
Commissioners

ATTEST:
John T. Bonifant
Secretary

Bids: March 21, 1957

Contract O&M-421

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
HOBOKEN-PORT AUTHORITY PIERS
PAVEMENT RESURFACING IN
HEADHOUSE AND PIER B

Sealed proposals for furnishing all labor, material and equipment for resurfacing portions of pavement in the headhouse and Pier B at Hoboken-Port Authority Piers, will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, until 11 A.M., Thursday, March 21, 1957, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a recipt in duplicate will be issued. The duplicate copy of the receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 7, 1957

Bids: March 19, 1957

Contract VTO-120.005

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
WEST 30TH STREET HELIPORT
PROTECTIVE PILING

Sealed proposals for the construction of pile dolphins at the West 30th Street Heliport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, March 19, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 7, 1957

Bids: March 27, 1957

City of Houston

NOTICE TO BIDDERS

Sealed bids, in duplicate, will be received by the City Secretary of the City of Houston, in Room 206, City Hall, until 10:30 A.M., Wednesday, Mar. 27, 1957, and all bids will be opened and publicly read in the City Council Chamber at 10:45 A.M. on that date for the following work—CONSTRUCTION OF

SHEPHERD-MEMORIAL GRADE SEPARATION.

Plans, specifications and necessary information may be obtained from the Director of Public Works.

Bidder's Bond, Certified Check, or Cashier's Check in an amount equal to 10 per cent of the highest amount bid must accompany each bid.

The City reserves the right to reject any and all bids or to accept any bid deemed advantageous to it.

Dated this 26th day of February, 1957.

M. H. Westerman
City Secretary

Bids: March 26, 1957

Contract HP-120.017

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
HOBOKEN-PORT AUTHORITY PIERS
(ZONE IV)
HEADHOUSE 4—MAIN OFFICE
PASSENGER ELEVATOR

Sealed proposals for furnishing and installing a passenger elevator in Headhouse 4 at the Hoboken-Port Authority Piers, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 26, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 7, 1957

Bids: March 25, 1957

Greater Hartford Bridge Authority

NOTICE TO CONTRACTORS

Sealed bids will be received by the Greater Hartford Bridge Authority at 71 Capitol Avenue, Hartford, Connecticut, until 2 P.M., E.S.T., Monday, March 25, 1957 and, at that time, publicly opened and read—for the construction of

ROADWAY APPROACHES TO WOLCOTT AVENUE CROSSING
IN
TOWNS OF WINDSOR AND SOUTH WINDSOR, CONN.

Approximately 8,026 linear feet of grading, drainage and bituminous concrete pavement, including two prestressed concrete girder grade separation structures.

Contractor must submit statement for pre-qualification to the Authority (7) days prior to submitting bids.

Bid bond forms, prequalification forms and proposals must be obtained at the Authority office at 71 Capitol Avenue, Hartford, Connecticut. Plans and specifications may be examined at the Authority office or may be purchased by check payable to Greater Hartford Bridge Authority in the amount of $30.00, including tax, for each set.

The minimum rates of wages to be paid labor of the various classifications shall be in accordance with the current schedule of wages established by the State Labor Commission as provided in Section 1194D of the 1955 Supplemental to the General Statutes of the State of Connecticut entitled "Rates of Wages for work on State Highways".

Surety Company Bond, on form furnished by the Authority for at least one-third of the amount of the bid, must accompany each proposal; certified check will not be accepted. The Greater Hartford Bridge Authority reserves the right to reject any and all bids.

The Engineer for the above project is Thomas Worcester, Consulting Engineer, 85 State Street, Boston, Mass.

W. Burke Smith
Director
Greater Hartford Bridge Authority

Bids: March 26, 1957

Contract PN-390.001

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDING NO. 186

Sealed proposals for the construction of Building No. 186 at the intersection of Terminal and Tyler Streets, Port Newark, together with paving and utilities therefor, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 26, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 7, 1957

OFFICIAL PROPOSALS

Bids: March 21, 1957

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Canal Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 21st day of March 1957, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, N. Y.						
Albany (Rte. 9 & 7)	FARC 57-31	Loudon Road Pt. 2, S.H. 119 Troy-Schenectady Pts 3 & Pts. 4, S.H. 604-630 Project U-639(9), U-411(3)	1 39	9" Cem. Conc. Pavt. 24', 2 @ 24' Var. Wide = 1.09 Mi. Asph. Conc. = 0.30 Mi. 2 Comp. W.F. Beam Brs. 60' Ea.	$120,000 Plans $25	$2,302,000
Essex (Rte. 9)	FARC 57-11	Elizabethtown-Keeseville, Pt. 1, S.H. 8302 Project F-459(3)	8 86	Asph. Conc., Opt. = 8.84 Mi. Misc. Work = 0.02 Mi.	$70,000 Plans $25	1,237,000
Essex (Rte. 9)	FARC 57-13	North Hudson-Euba Mills, Pt. 2, S.H. 5182 Euba Mills-New Russia, S.H. 5117 Project F-393(9)	2 26	9" Cem. Conc. Pavt. 24' Var. Wide = 2.21 Mi. Asph. Conc., Opt. = 0.05 Mi.	$45,000 Plans $15	811,000
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Oneida	M 57-2	Nine Mile Feeder at Trenton Fall	....	13.5' Corrug. Plate Arch Extension of Exist. Culvert	$900 Plans $10	16,000
DISTRICT No. 3, W. ROBINSON, District Engineer, Weigh Lock Building, 301 E. Water St., Syracuse, N. Y.						
Onondaga	FISH 57-6	Interstate Route 5 (Mattydale-Brewerton) and Access &	9 80	9" Cem. Conc. Pavt. 2 @ 36' Var. Wide = 12.45 Mi.	$612,000	11,122,000
	FASH 57-7	Local Cross Roads including S.H. 452, S.H. 5470 and FASH 54-3: North Syracuse Connection (Rte. 11 to Interstate Rte. 5) Project I-1118(6), U-463(15)	(8 53) (Acc.)	Asph. Conc. = 5.37 Mi. Misc. Work = 0.51 Mi. 7 Hy. Sepa. Comp. I-Beams 316.7', 148.5', 264.3', 318.6', 156', 241' & Abt. only for 178.1' Viaduct with Elev. Ramps	Plans $100	
Onondaga	FISH 57-8	Interstate Route 5 (Mattydale-Brewerton) (Mattydale Viaduct) Project I-1118(10)	0 43	Cem. Conc. Br. Pavt. Superstruct. & Piers Only for Viaduct with Elev. Ramps 1781.1'	$205,000 Plans $25	3,723,000
Onondaga and Oswego	FISH 57-3	Interstate Route 5 (Brewerton-Central Square) and Access or Local Roads Project I-1118(4)	3 32 (1 01) (Acc.)	9" Cem. Conc. Pavt. 2@36' Wide = 2.83 Mi. Asph. Conc., Opt. = 0.30 Mi. Asph. Conc., Opt. Acc. = 1.01 Mi. Misc. Work = 0.19 Mi. 3 Hy. Seps. Comp. I-Beams 244.9', 90' & 127.6' Substructure only for Steel Arch Br. 448'	$277,000 Plans $50	5,035,000
Oswego	FISH 57-9	Interstate Route 5 (Brewerton-Central Square) (Oneida Lake Bridge) Project I-1118(9)	0 17	Cem. Conc. Br. Pavt. = 0.09 Mi. Asph. Conc. = 0.08 Mi. Superstruct. Only for Steel Arch Br. 448'	$108,000 Plans $25	1,963,000
Seneca (Rte. 96)	FARC 57-24	West Junius-Waterloo Pt. 1, S.H. 8056 Waterloo-Burns Corner, S.H. 1400 Waterloo Village-North Road, S.H. 1605 Project F-97(6)	5 41	Asph. Conc., Type 1A	$24,000 Plans $10	453,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, N. Y.						
Livingston (Rte. 255)	FARC 57-28	Dansville-Conesus, Pts. 2 & 3 S.H. 1702 Project S-488(1)	5 87	Asph. Conc., Opt.	$20,000 Plans $10	363,000
Monroe	FAC 57-3	City of Rochester: Inner Loop (Front St. to North St.) Project U-1089(7)	0 06	Demolition of Building	$5,000 Plans $10	92,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, 65 Court St., Buffalo 2, N. Y.						
Erie	D.A.57-1	Staley Road Project D-AD-10(1)	2 77	Asph Conc., Opt.	$12,000 Plans $10	221,000
DISTRICT No. 6, J. H. THOMAS, District Engineer, 30 W. Main St., Hornell, N. Y.						
Tioga (Rte. 17, 17C)	FARC 57-25	Waverly-Owego, Pt. 3, S.H. 5257, Owego-Campville, Pt. 1, S.H. 8475, Owego-Campville, Pt. 3, S.H. 1870, Campville-Endicott, Pt. 1 & 2, S.H. 8376 Project F-498(5); F-530(7)	4 93	Asph. Conc., Opt. = 4.84 Mi. Misc. Work = 0.09 Mi. Repair of 2 Exist. Bridges	$50,000 Plans $25	896,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
*St. Lawrence, N. Y. and Grenville, Ont., Can.	O.B.A.57-1	*Ogdensburg Bridge, Cont. 1	....	Bridge Substructure for Piers M-1 to M-6 Incl.	US $230,000 Plans $10	US 4,200,000
DISTRICT No. 8, KURT G. RAUBR, Acting District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Orange	C.T. 57-1	N. Y. State Thruway-Catskill Sect.-Sub. 7 (Suffern to Harriman) (Arden Sta. Rd. Bridge)	0 03	Asph. Conc., Opt. Widening Existing 45.5' Bridge	$3,500 Plans $10	62,000
Orange (Rte. 32)	R.C. 57-23	Newburgh-Woodbury, S. H. 42	3 93	Asph. Conc., Opt.	$19,000 Plans $10	353,000
Ulster Rte. (32, 213)	FARC 57-21	Rosendale Village, S.H. 1419 Rosendale-Perrines Bridge, S.H. 419 Kingston-High Falls, S.H. 229 Project F-513(11)	7 40	Asph. Conc., Opt.	$42,000 Plans $15	768,000
Westchester (Rte. 116)	FERC 57-29	Batley Corners-State Line, S.H. 1340 Project ER-46(1)	0 21	9" Cem. Conc. Pavt. 20' Wide Prestressed Conc. Beam Br. 47'	$8,000 Plans $10	150,000
Westchester (Rtes. 116, 121)	FERC 57-30	Turk Hill-Putnam County Line, S.H. 151 Peekskill-Salem Center, Pt. 2, S.H. 262 Project ER-45(1)	0 47	Asph. Conc., Opt. Prestressed Conc. Beam Br. 81'	$13,000 Plans $10	236,000
DISTRICT No. 9, J. C. FREDERICK, District Engineer, 71 Frederick St., Binghamton 21F, N. Y.						
Otsego (Rte. 23)	FARC 57-26	South New Berlin-Morris, Pt. 2, S.H. 8517 Project F-620(9)	7 09	Asph. Conc., Opt.	$30,000 Plans $15	553,000
Sullivan	FASS 57-3	Hartwood-Oakland Valley Sects. 1 and 3, C.R. 48 & 49 Project S-452(1)	2 72	Bit. Mac. Pen. Meth. Ty. 1 Prestressed Conc. Beam Br. 183'	$40,000 Plans $15	744,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main Street, Babylon, L. I., N. Y.						
Kings	FAPE 57-1	Prospect Expressway Cont. 4A (10th Ave. to Greenwood Ave.) Project U-1081(3)	0 58 (1 31) (Acc.)	9" Cem. Conc. Pavt. (Carbon Black) 2@36' Var. Wide = 0.54 Mi. 9" Cem. Conc. Pavt. Var. Wide = 0.37 Mi. Sheet Asph. Pavt. = 0.64 Mi. Granite Block Pavt. = 0.30 Mi. Misc. Work = 0.04 Mi. 2 Hy. Seps. Weld. Fr. Beam & Girder 108.3' & 107.8' 1 Ped. Br. Plate Girder 139.5' 1 Ped Br. Steel Rig. Fr. 123'	$245,000 Plans $100	4,491,000
Nassau	NSP 57-1	Northern State Parkway	1 08 (1 59) (Acc.)	8" Cem. Conc. Pavt. (Carbon Black) 2 @ 48' Var. Wide = 0.93 Mi. 8" Cem. Conc. Pavt. Var. Wide = 1.11 Mi. Asph. Conc., Opt = 0.60 Mi. Misc. Work = 0.03 Mi. 2 Hy. Seps. R. C. Rig. Fr. 65.3' & 86.1' 1 Hy. Sep. Steel Beam 86.5'	$106,000 Plans $25	2,118,000
Nassau	FASS 57-4	Peninsula Blvd. Cont. No. 6, Co. Rd. Project S-319(6)	1 59 (0 31) (Acc.)	Asph. Conc., Opt. 2 Reinf. Conc. Box Brs. 20' & 20'	$98,000 Plans $15	1,784,000
Queens (Rte. 25D)	FAHHE 57-1	Horace Harding Expressway Sect. H, Cont 2 (207th St. to Cloverdale Blvd.) Project U-862(12)	1 87 (2 91) (Acc.)	9" Cem. Conc. Pavt. (Carbon Black) 2 @ 30' Var. Wide = 0.96 Mi. 9" Cem. Conc Pavt Var. Wide = 0.32 Mi. Asph. Conc, Opt. = 2.89 Mi. Grading, Drainage & Misc. Work = 0.91 Mi. 3 Hy. Seps. Comp. I-Beams 107', 106.8', & 105.8' 1. Ped. Overpass I-Beam 137.5'	$275,000 Plans $100	5,062,000
Suffolk	B.P. 57-47	Village of Asharoken Beach	....	Beach Protection with 5 Conc. Block Grains	$3,000 Plans $10	55,000
Suffolk (Rte. 27)	FARC 57-19	Bridgehampton-Devon, Pt. 2 S.H. 1524 Project F-559(10)	2 70	Asph. Conc., Opt. = 2.68 Mi. Misc. Work = 0.02 Mi.	$3e,000 Plans $15	710,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

*RE: O.B.A. 57-1, St. Lawrence County, N. Y. and Grenville, Ontario, Canada:

Maps, plans, specifications and proposals may also be seen and obtained at the offices of Dr. P. L. Pratley, 909 Drummond Building, Montreal, Quebec, Canada and at Modjeska and Masters, Forster at 6th Street, Harrisburg, Pa.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
Supt. of Public Works

OFFICIAL PROPOSALS

Bids: April 3, 1957

City of Alcoa

NOTICE TO CONTRACTORS

Sealed proposals addressed to the City of Alcoa, Alcoa, Tennessee, for the following contracts:

SANITARY SEWAGE SYSTEM
PROJECT A
SEWAGE TREATMENT PLANT
PROJECT B

will be received by the City of Alcoa in the office of the City Manager in the Municipal Building until 11:00 A.M. (E.S.T.) on April 3rd, 1957 and will be immediately opened and read aloud.

Proposal shall be inscribed on the containing envelope with the bidders name and Tennessee Contractors License Number and the inscription "Proposal for Sanitary Sewage Project A and/or Sewage Treatment Plant Project B".

Copies of proposal, drawings, and specifications may be obtained from the office of the Recorder, Municipal Bldg., Alcoa, Tennessee. A deposit of twenty-five dollars ($25.00) will be required for each set of plans and specifications. The deposit will be refunded if the documents are returned in good condition not later than ten (10) days after the opening of the bids.

All bidders must be licensed Contractors as required by Chapter No. 135 Public Acts of 1945 of the General Assembly of the State of Tennessee.

A bid bond or certified check of 5% of the entire bid shall accompany bid payable to the order of the City of Alcoa, Tennessee.

Bids received after the stipulated time for opening will be returned unopened.

No bid may be withdrawn for a period of thirty (30) days after the opening of the bids.

The City of Alcoa reserves the right to waive any informalities in/or to reject any or all bids.

City of Alcoa
Ross F. Walker
City Manager

Bids: April 9, 1957

Contracts 454 and 455

WEST DELAWARE TUNNEL

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, April 9, 1957, for the following two contracts for the construction of the easterly portion of the West Delaware Tunnel of the Delaware system, comprising about 19 miles of concrete lined pressure tunnel, circular in section and 11 feet 4 inches in finished diameter, and Shafts 5 to 7 inclusive, 14 feet in diameter, which will be circular in section and lined with concrete, all as set forth in the specifications:

CONTRACT 454, for the construction of about 60,000 linear feet of tunnel, including Shaft 5, approximately 760 feet deep, and Shaft 6, approximately 780 feet deep, located in the Towns of Rockland and Neversink, Sullivan county, New York.

CONTRACT 455, for the construction of about 42,000 linear feet of tunnel, including Shaft 7, approximately 650 feet deep, and the tunnel outlet, located in the Town of Neversink, Sullivan county, New York.

A bidder on both of these contracts may, if he so desires, specify in the bid form of either or both contracts, that he will agree to make a percentage reduction from the total cost of the contract, if both contracts are awarded to him.

Pamphlets of the two contracts containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in the Secretary's office, Room 1312 at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

OFFICIAL PROPOSALS

Bids: March 21, 1957.

Yorktown Heights High School

SECTION A
NOTICE TO BIDDERS

Sealed proposals for the construction of an Addition to the Brookside School, Yorktown Heights, New York, will be received by the Board of Education, Central School District No. 2, Towns of Yorktown, New Castle and Cortlandt, Westchester County, New York, at the Yorktown Heights High School Auditorium until 8 o'clock P.M., E.S.T., on March 21, 1957, at which time and place the proposals will be publicly opened and read.

Separate proposals will be received for the following work:

Contract No. 1—General Construction
Contract No. 2—Plumbing
Contract No. 3—Heating and Ventilating
Contract No. 4—Electric

Forms of Proposal, Drawings, Specifications and other Contract Documents may be obtained on or after March 1, 1957, by each bidder on Contracts No. 1, 2, 3 and 4, at the office of the Architects, Ferrenz & Taylor, 152 West 42nd Street, New York 36, New York. One complete set of General Construction, Plumbing, Heating and Ventilating and Electric will be furnished to each bidder upon receipt of a deposit check made payable to The Architects for the amount of Fifty Dollars ($50).

Deposits will be refunded upon return of the documents in good condition within 30 days after opening of bids provided that a proposal has been submitted. Deposit shall be forfeited in case of failure to submit a proposal. Additional sets or portions thereof may be obtained by any bidder upon payment of the actual cost of reproduction.

Proposals shall be made and received upon the following conditions:

Each bid must be accompanied by cash or a certified check, made payable to the Board of Education, or a bid bond. The amount of such bid security shall be five (5%) percent of the amount of the bid, as a guarantee that in case the contract is awarded to the bidder, he will within ten days thereafter execute the contract and furnish satisfactory bonds. Upon failure to do so he shall forfeit the security as liquidated damages.

The cash or checks of all except the three lowest bidders will be returned within three days after the opening of the bids, and the remaining cash or checks will be returned when the contract is executed, or in any event within 45 days after the opening of the bids. No bid may be withdrawn within forty-five days after the opening thereof.

The successful bidders will be required to furnish a payment and performance bond in the form incorporated herein, and with securities satisfactory to the Board, which bonds shall be in the amount of the contract and shall be conditioned upon the faithful performance of the contract and the payment of all claims for materials and labor furnished under the Contract.

The time for completion shall be stated by the bidder in his proposal.

The Board of Education reserves the right to reject any or all bids and to waive any irregularities, or to accept any proposal by any bidder which in the opinion of the Board of Education will be in the best interest of the Board.

February 25, 1957.

Board of Education
Central School District No. 2
Towns of Yorktown, New Castle and Cortlandt, Westchester County, New York
By Bertha Smith, Clerk

OFFICIAL PROPOSALS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4866) will be received at Denver, Colorado, until April 11, 1957, for furnishing three 84-inch ring-follower gates, each with integral hydraulic hoist; and one set of gate handling equipment for outlet works and auxiliary outlet works at Trinity Dam, Central Valley Project, California. Delivery is desired within 420 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

EMPLOYMENT OPPORTUNITIES

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Civil Engineer-Estimator: for industrial construction. Approximately 10-15 years of both estimating and job experience. Salary open, position permanent. Located in Florida. P-3632, Engineering News-Record.

Superintendent—Swimming pool construction. All phases gunite pool experience essential. Salary open. Westchester County. Reply Box 505, Bedford, N. Y.

Position Vacant—Field Superintendent for concrete bridge and dam construction. Please furnish complete education and experience data, references and salary desired. Reply to P-4282, Engineering News-Record.

Designers—Electrical and Piping . . . Power Plants and Industrial Buildings. Marbarry Corp., 120 Greenwich St., New York City 6, N. Y. REctor 2-3749.

Highway Materials Engineers and Inspectors. Large commercial Inspection and Testing Agency desires to expand permanent personnel gradually during next several months. Openings will be in various areas, Continental United States. Submit age, education, experience, and salaries earned. All correspondence confidential. P-4274, Engineering News-Record.

Civil Engineer—Prefer recent graduate. Opportunity in growing Florida organization. Contact David Russel, Vice Pres., Belswenger, Hoch and Assoc., 1501 Prudential Bldg., Jacksonville, Florida.

Soils Engineer—prefer man with MS in soils about 1945 or 1946—to head up a design group in a firm of consulting engineers specializing in design of dams. Must be top-notch design engineer and supervisor. Salary open. Location Midwest. P-3942, Engineering News-Record.

Wanted—Experienced Designers on Highway Projects. Location central Ohio. Excellent opportunities for those who can qualify. Long range work program. Generous employee benefits. Reply stating qualifications, availability, and salary requirements. P-4264, Engineering News-Record.

Concrete Engineer for mix design. Capable of supervising Material Testing Laboratory for work in southern Idaho. Ample relocation allowances. Send resume to F. C. Torkelson Company, Box 185, Idaho Falls, Idaho.

Building Construction Project Manager. Position of top responsibility with American contractor in South America. Applicants must be completely qualified by experience to take full responsibility for all phases of monumental type building project. Latin American experience desirable. Good salary and living conditions. Write detailed resume of experience, education, personal data, availability, and salary expected to P-4413, Engineering News-Record.

Hydraulic Engineers experienced in the supervision of design of water projects, including large diameter pipe lines, pumping stations, storage reservoirs and automatic control devices. O'Brien & Gere, 400 East Genesee Street, Syracuse, New York.

Bridge Superintendents and Foremen for sizable structure project in Richmond, Virginia. P-4372, Engineering News-Record.

(Continued on following page)

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36. March 21st issue closes March 11th.

Opportunities in Alaska

Resident Engineers

Top-quality men with broad experience in construction supervision, including buildings.

Chief Engineers

Structural **Mechanical**

Field Engineers

Architectural **Mechanical**
Electrical **Civil**
Soils and Concrete

Excellent salary—plus substantial overtime. Transportation and travel pay, paid vacation and sick leave.

Send complete information covering qualifications, past earnings, and availability.

METCALF & EDDY

1300 Statler Building, Boston 16, Mass.

SUPERINTENDENT

Prestressed Concrete Plant

Unusual opportunity for man with prestressed concrete experience to take charge of all operations in new plant near Chicago. Minimum of five years experience in the field. Fine potential. Best of benefits. Worth investigating.

P-4442—Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SUPERINTENDENT BUILDING CONSTRUCTION

Top flight man by growing company operating nationally. Give all pertinent data in reply including education, experience, salary, references and when available.

BLOUNT BROTHERS CONSTRUCTION CO.
P. O. Box 949 **Montgomery, Ala.**

ESTIMATOR-ENGINEER

Permanent position available in office of long established Southern California General Contractor for Estimator with excellent references and reputation. Must be capable of complete estimate preparation. Age 25 to 35. Salary open. Send complete resume to

P-4379, Engineering News Record,
68 Post St., San Francisco 4, California

ASSISTANT CHIEF ENGINEER

C.E. experienced in structural steel detailing and design, checking and estimating to understudy for Chief Engineer with long established structural steel fabricator. Submit detailed resume and photograph.

C. E. MORRIS COMPANY
745 Curtis Ave. Columbus 3, Ohio

POSITIONS VACANT
(Continued from preceding page)

Wanted in Indiana—Graduate engineer 25 to 35 to work at all phases of Asphalt Paving contracting. Offer option to buy 1/3 interest with terms. P-4317, Engineering News-Record.

Young graduate Civil Engineer or equivalent experience to assist Director of Public Works, village of 30,000. Salary Plan $5904 to $6840. Write Director of Personnel, Village of Maywood, Illinois, 125 South 5th Avenue.

Structural Engineers & Draftsmen—to design and detail building-frames and foundations. Excellent opportunity for a good future with a growing firm in a progressive community. Salary depends upon experience and ability. Replies treated confidentially. Stuart H. Snyder, Consulting-Engineer, 321 Denison Bldg., Syracuse, N. Y.

Civil Engineers to work with consulting engineering firm. Long established municipal consulting firm desires to secure civil engineers for permanent positions. Experience in water and sanitation required. Offices located in very desirable small college community in Colorado area. Expansion of firms operations provide unlimited opportunities for advancement for properly qualified engineers. Firm desires to employ engineers with from one to fifteen years of experience. Salaries $5,100 to $6,600. Please give experience and full details in reply. Replies will be held confidential if requested. P-4371, Engineering News-Record.

Wanted: Structural Engineer for design of steel and concrete structures—Knowledge to analyze indeterminate structures is essential—The position open for a qualified engineer with or without experience to be a member of the firm in the future. Reply in full with reference and recent photograph. Location North Carolina. P-4322, Engineering News-Record.

Irrigation Engineer—For position as assistant to Engineer-Manager on operating irrigation system, Arizona. Desire man with experience in construction and management. Salary open. Please submit record, references and salary requirement first letter. P-4257, Engineering News-Record.

Highway and Bridge Engineers—Designers, Experienced, for Permanent Positions in our New York Office. Excellent Salary Plus Overtime. Air mail resume to Farkas & Barron, Consulting Engineers, 5 Beekman Street, New York 38, N. Y., or call BEekman 3-8387.

Wanted—Dirt Superintendent to work for long established Illinois Contractor, operating in Illinois, Kentucky, Missouri. Salary commensurate with experience and ability. P-4323, Engineering News-Record.

Bridge Designers and Draftsmen with experience for permanent positions. Forward full educational, employment and personal data with salary requirements. Macomber & Faber, 1824 North Fourth Street, Harrisburg, Pennsylvania.

Soils, Asphalt & Concrete Inspectors . . . Field & Lab Tech; also Party Chief & Instrument Man. O'seas. Mild Climate. Write Mr. Levy, Patchen & Zimmerman, 120 Greenwich St., NYC 6. REctor 2-4187.

POSITIONS VACANT

Engineers with experience in municipal and industrial waste collection and treatment, or projects of related type. Midwest consulting firm with long established practice limited to sanitary engineering projects. Please send full details of education and experience, references and approximate salary requirements. P-4461, Engineering News-Record.

Teaching position in civil engineering and mechanics starting next September. Rank and salary dependent on qualifications. Address Department of Civil Engineering, Clarkson College of Technology, Potsdam, New York.

Sales Engineer—Estimator for structural steel and miscellaneous iron fabricator. Degree in architectural or civil engineering desirable. State experience, education, age, salary requirements and enclose snapshot with first letter to Southern Iron Works, Inc., P. O. Box 430, Alexandria, Va.

Civil Engineer I: Salary range $4,902-$5,980 annually. Qualifications: Twenty-one to thirty-five years of age. B.S. degree in civil engineering. Driver's permit. P-4467, Engineering News-Record.

Payroll and Cost Clerk for construction job site, Syracuse, N. Y. Hercules Concrete Pile Co., P. O. Box 266, West New York, N. J.

Openings for Chemical or Mechanical Engineers experienced in the design and modification of specialized equipment for processing biological materials. Salaries range from $4480 to $7570 per annum. Please mail resume to Personnel Officer, Fort Detrick, Frederick, Maryland.

Superintendent—Complete knowledge of road construction and bituminous paving. Must be able to estimate and take charge of complete road job. Year around position with reliable construction company in Central New York. P-4494, Engineering News-Record.

Civil Sanitary Engineers, Designers, Draftsmen, experienced in the design of sewers, pumping station, sewage treatment plants, water supply systems. Salary open, send resume to: W. B. Bennett, Engineer, P. O. Box 464, Bessemer, Ala.

Architectural Engineer: Degree in Architectural, Mechanical or Civil Engineering, plus three years supervisory experience in construction. Experience may be substituted for degree. Functions primarily technical and administrative, rather than on-the-job supervision or inspection of construction. Starting salary $7,000.00 annually. Excellent company benefits. Contact Charles R. Brown, Land Clearance and St. Louis Housing Authority, 2031 Olive Street, St. Louis 3, Missouri.

SELLING OPPORTUNITY OFFERED

Sales Rep—established line of warning lights to construction industry. Contact wholesalers only. Salary plus incentive. Locate in lucrative southern territory. Write, W. R. Burrows, R. E. Dietz Co., Box 1214, Syracuse, N. Y.

POSITIONS WANTED

Surveyor—Reg. 16 yrs. exp. in property, highways and construction. State benefits and possible starting salary. Write PW-4423, Engineering News-Record.

Project-Manager-Superintendent, heavy & bridge construction, 19 years experience. $200. PW-4446, Engineering News-Record.

Accountant Comptroller experience in heavy construction, dams, roads, airfield bldgs., under ground systems, major accounting special course industrial management go anywhere, age 45. PW-4445, Engineering News-Record.

(Continued on page 158)

ELECTRICAL DESIGNERS

Immediate openings available in our Cincinnati, Ohio office for electrical designers who have had experience in industrial plant design and layout. Degree not essential.

These positions offer opportunity for advancement and long term employment with good salaries and benefits.

Send a complete resume of your experience, education, salary requirements and availability to:

Mr. R. W. Brockman

THE

H. K. FERGUSON

COMPANY

Cooper and Wyoming Avenue
Cincinnati 15, Ohio

POSITIONS AVAILABLE

FOR

ENGINEERS
DESIGNERS
DETAILERS

ON HIGHWAY, EXPRESSWAY, AND SANITARY ENGINEERING DESIGN IN OUR ST. LOUIS OFFICE

YOU WILL WORK WITH HIGHLY SKILLED ENGINEERS IN A PLEASANT ENVIRONMENT

Inquire as to overseas openings

Write fully to

SVERDRUP & PARCEL ENGINEERING CO.

1134 LOCUST ST., ST. LOUIS 1, MO.

ELECTRICAL ENGINEER

Experienced in Power Distribution, Controls and Lighting in Industrial and Commercial Buildings. Interesting work in progressive consulting office, liberal benefits include: Group Insurance, Hospitalization, Vacation and Bonus Plan. Write:

SAMBORN, STEKETEE AND ASSOCIATES, J. H. V. EVANS

Engineers - Architects

1214 Cherry Street Toledo 4, Ohio

SAN FRANCISCO City and County

Immediate Employment Possibilities

VARIETY OF PUBLIC WORKS PROGRAMS

Junior Engineer (Civil)	$460—$530
Assistant Engineer I (Civil)	$500—$600

For Further Information and Applications Inquire:

San Francisco Civil Service Commission

154 City Hall
San Francisco, California

STRUCTURAL DESIGNERS

FOR HIGHWAY BRIDGE WORK

SENIORS and JUNIORS

Work in New York City and New Jersey

BROWN & BLAUVELT

468 Fourth Avenue, New York City
44 Cooper Street, Woodbury, New Jersey

HIGHWAY & SANITARY

ENGINEERS—DESIGNERS
DRAFTSMEN—PARTY CHIEFS

PERMANENT POSITIONS IN FLORIDA

Excellent opportunities for advancement. Experience necessary, except for engineering graduates. Paid vacation, sick leave, holidays, overtime, Blue Cross—moving allowance.

Glace Engineering Corporation

First Federal Building, St. Petersburg, Florida

ENGINEERS DESIGNERS DRAFTSMEN

TOP LEVEL JOBS

with leading companies

Positions in the fields of architecture, electrical & mechanical equipment, instrumentation & chemical process plants.

Also excellent opportunities and salaries for experienced men in designing of refineries, chemical & power plants, industrial & commercial buildings, highways. No Fee.

TECHNICAL DIVISION
PROFESSIONAL OFFICE

NEW YORK STATE EMPLOYMENT SERVICE

119 Fifth Ave., NYC OR 7-9100

ENGINEERS

Caterpillar Tractor Co., the world's leading manufacturer of earthmoving equipment, has openings for all types of engineers to fill responsible Sales Promotion and Dealer contact positions in both the United States and foreign countries. Advancement and security are certain for qualified men. Salaries and other benefits are well above the industry average. Accepted men are given thorough and diversified training in preparation for a stimulating career.

Applicants should be willing to travel. An engineering degree or considerable practical experience is required. Men 35 or under preferred, but positions are not restricted to this age group. Engineers interested in challenging careers with the leading manufacturer of heavy construction equipment should send full particulars of experience and education to Mr. R. R. Haarlow, Professional Employment Co-ordinator. All inquiries will be treated on a confidential basis.

EMPLOYMENT DIVISION

CATERPILLAR TRACTOR CO.

Peoria, Illinois

MECHANICAL ENGINEERS

$7200 to $9600

Positions available as Senior Engineer and Engineer. Senior Engineer will have opportunity to be appointed Head of Mechanical Department after proving his ability.

Qualifications:

1. College degree or equivalent.
2. Registered Engineer or capable of obtaining registration. Membership in ASME desirable.
3. Broad experience (min. 5 years) as a designer on wide variety of mechanical engineering projects such as Power and Heating Plants; Heating, Ventilation, and Air conditioning; Steam, Gas, Compressed Air, Gasoline, and Process Piping Systems; Dust Collection systems; Materials handling systems.
4. Must possess sound basic knowledge of requirements of systems as well as equipment and other components.
5. Recommendations must be obtainable from former employees.

Location of Positions:

Augusta; Atlanta; Pensacola, Fla.

FOR PROMPT ACTION

Submit personal data, references, education and experience resume'. Interviews will be arranged.

PATCHEN AND ZIMMERMAN, ENGINEERS
AUGUSTA, GEORGIA

McKEE NEEDS

- Structural
- Concrete
- Piping
- Mechanical

ENGINEERS

Our Metals, Refinery and Industrial Divisions offer you wide choice of opportunity to make full use of your talents, with excellent prospects for promotion to supervisory, staff and executive posts.

Broad diversification of work in our three engineering divisions assures you *permanent* security of employment.

You can build a strong foundation for your future with McKee. For complete information on the McKee organization and the extra benefits this company offers you write for our folder "The Key to Your Future" or contact us by telephone.

Telephone TOwer 1-2300, Cleveland, Ohio
or write to Edward A. Kolner
Arthur G. McKee & Company
2300 Chester Ave., Cleveland 1, Ohio

Arthur G. McKee & Company
Engineering offices in
CLEVELAND, OHIO • UNION, N.J. • TORONTO, ONT.

ENGINEERS

Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical, and foundation engineers for interesting work on large dams, powerplants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

HARZA ENGINEERING CO.
400 W. Madison St. Chicago 6, Ill.

STRUCTURAL STEEL DETAILERS AND ESTIMATORS

Have openings available for competent detailers and estimators who have had experience with steel fabricators. Please give full details in letter of application.

The MIDWEST STEEL & IRON WORKS Co.
P. O. Box 5384, Terminal Annex Sta.
Denver 17, Colorado

EXPERIENCED HYDRAULICS ENGINEER WANTED

Graduate engineer experienced in paper mill hydraulics, planning and development of piping layout systems, etc. for large expanding and progressive mill in Maryland. Good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to
Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

MAINE

Three permanent positions, Civil or Mechanical Graduates.

Good Churches, Schools, Outdoor Recreation, Liberal Vacation, Pension, Paid Up Life Insurance, Sick Leave. Salary approximately $5,800.00.

Engineering Department, Bangor and Aroostook Railroad, Houlton, Maine. Tel. 2213

SALES ENGINEER

A major steel company has need for sales engineer to promote and sell fabricated products in New England states. Excellent opportunity for man 28 to 30 years old with engineering background and a desire for sales work. Attractive starting salary with company car, expenses and bonus plan.

P-3808, Engineering News-Record
Class. Adv. Div. P.O. Box 12, N. Y. 36, N. Y.

ENGINEERS - DESIGNERS - DRAFTSMEN

for work on
BRIDGES AND EXPRESSWAYS

Opportunity for continuous employment in our Louisville, Chicago, Cincinnati or Lansing offices for graduates or engineers with practical backgrounds. Overtime allowance, vacation time and insurance and retirement plan.

Please give detailed personal and experience record, three competent references and salary expected in first letter.

Hazelet & Erdal, Consulting Engineers
COMMERCE BLDG.
LOUISVILLE, KENTUCKY

CONSTRUCTION FIELD MANAGER

Capable of organizing and supervising all work for reliable, long established Southern California Company. Duties will include field employment, labor relations, planning and methods, etc. Position is permanent for qualified individual. First reply should state availability, resume, references and salary required. All inquiries will be held in confidence and acknowledged.

P-4418, Engineering News-Record,
68 Post St., San Francisco 4, Calif.

Engineers
Designers
Sr. Draftsman

Relocate to San Francisco or Los Angeles California

Excellent opportunities for qualified technical personnel having experience in steam power, refinery, hydro power, sub-station, or related projects.

Send resume to:
Manager of Employment & Placement
Industrial Relations Division

BECHTEL

Engineers & World-Wide Builders for Industry

220 Bush St. San Francisco, Calif.
Recruiting Offices in New York, Los Angeles, San Francisco and Houston

DRAFTSMAN

EXPERIENCED STRUCTURAL STEEL DETAILERS AND CHECKERS

on Buildings and Conveyors. Long range program, good working conditions, vacation and bonus plan, liberal insurance benefits. Work in our Cleveland or Toledo office. Send complete resume of experience and qualifications to:

SAMBORN, STEKETEE AND ASSOCIATES, J. H. V. EVANS
1214 Cherry Street, Toledo 4, Ohio
4913 Von Epps Road, Cleveland 9, Ohio

DEPARTMENT OF WATER AND SEWERS
CITY OF MIAMI
FLORIDA

CIVIL ENGINEERS:
(Civil Service Positions)
SALARY OPEN

Job Requirements: Design of water supply, distribution, treatment and pumping facilities, sanitary sewers, sewage pumping and sewage treatment.

Education and Experience Requirements: B. S. in Civil or Sanitary Engineering and five (5) years experience in above special fields—or—the equivalent combination of related education and experience in lieu of a degree.

Additional data will be sent to all applicants.

Send complete summary of your education and experience to: Mr. C. F. Wertz, Director, Dept. of Water and Sewers, P. O. Box 316, Miami 33, Florida.

CIVIL ENGINEERS

Your Training in Stress and Weight Can Bring You A Rewarding Career

in Aircraft Nuclear Propulsion at General Electric

If you've been thinking that the development of nuclear propulsion systems for aircraft is out of your line, you've overlooked a chance to get into a fast-growing field with a wide-open future.

Your stress and weight experience and ability can be applied immediately to problems in aircraft nuclear propulsion because. . . .

General Electric gives you what you need to know about the nuclear applications of your field.

. . . through a full-tuition refund plan for university courses leading to an M.S. in nuclear engineering or any other graduate degree, and in-plant training courses conducted by the top men in the nuclear field. On the job you'll work with experts who'll guide you in applying your present skill to the problems at hand.

Comprehensive employee benefit programs
High starting salary
Relocation expenses paid
Periodic merit reviews

Send your resume in confidence, stating salary requirements, to location you prefer:

J. W. Rosselot
P. O. Box 132
Cincinnati, Ohio

L. A. Munther
P. O. Box 535
Idaho Falls, Idaho

GENERAL ELECTRIC

ESSO EXPANSION PROGRAM

Provides Opportunities

in

COST ENGINEERING

Career positions available for graduate engineers in long range expansion program. Work involves technical aspects of cost estimating, development of estimating methods and cost analysis for all types of petroleum and chemical processing plants.

Excellent opportunities to learn many aspects of process and mechanical design while contributing to selection of optimum equipment for world wide expansion program.

High scholastic rating and ability to grow with organization particularly desired. Prefer one to five years engineering experience. Salary commensurate with experience and qualifications.

All inquiries will be considered promptly and held confidential.

Letter should give full details of education, experience, salary desired, availability date and references.

ESSO RESEARCH and ENGINEERING COMPANY

(Chief Technical Subsidiary—Standard Oil Company (New Jersey))

Esso Research Center
Employee Relations—C

P.O. Box 51 Linden, N. J.

STRUCTURAL DRAFTSMEN

FOR HIGHWAY BRIDGE WORK

In New York City and New Jersey

BROWN & BLAUVELT

468 Fourth Avenue, New York City

44 Cooper Street, Woodbury, New Jersey

Highway & Bridge Engineers Designers & Draftsmen

Career opportunities for men interested in professional recognition.
Excellent working conditions and employee benefits including liberal retirement program.
Openings in Pennsylvania, Maryland, Florida, West Virginia, Mississippi and overseas.

Air Mail Resume TO R. L. SHAW, *Personnel Director*

MICHAEL BAKER, Jr., INC.

BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

GRADUATE CIVIL ENGINEERS or ARCHITECTURAL ENGINEERS

Major Southwestern general contractor needs engineers for work in estimating dept. Job requires investigation and take off and can also lead to field work depending on interest of employee. Excellent opportunity for young men to obtain desirable position with reliable firm doing all types of construction work. Have openings in El Paso, Dallas, and Los Angeles offices.

ROBERT E. McKEE

GENERAL CONTRACTOR, INC.

PO BOX 562 EL PASO, TEXAS

ENGINEERS—DESIGNERS

Highway & Bridge

Excellent advancement opportunities in a long established and progressive consulting firm, for engineers experienced in the design of highways and bridges.

Interesting and challenging permanent assignments. Attractive salaries and liberal employee benefits.

Note: Employees of BPR, state, county or city highway organizations may not be employed without written consent of such public employer.

Write for application blank.

ROBERT E. SMITH

SUCCESSOR TO CAPITOL ENGINEERING ASSOCIATES

CONSULTING ENGINEER

5 ST. PAUL STREET ROCHESTER 4, NEW YORK

POSITIONS WANTED
(Continued from page 154)

Construction and Expediting Engineer completing four (4) years of expediting material and equipment and coordinating same with field for construction of $190 million Industrial Plant. Sixteen (16) additional years of light and heavy construction experience working as, foreman on highway construction, Field Engineer and Asst. Superintendent on building construction and Project Engineer on Dam and Building Construction. Excellent organizational abilities. Available in six (6) weeks. PW-4437, Engineering News-Record.

Supervisor Pipe Installation. 30 yrs. experience. Oil Rfys., Power-Steam-Chemical plants. Local or foreign work. Go anywhere. Want connection. Ans. PW-4444, Engineering News-Record.

Construction Engineer—37, BS and BA degrees, Experience in industrial structural erection and machinery installation; supervision, estimating, pricing, bidding, and cost-accounting. PW-4392, Engineering News-Record.

Sanitary & Hydraulic Engineer, 32, MSCE, Registered N. Y. & N J, 11 yrs. experience in water supply, sewerage and drainage facilities design and construction and office administration, U.S. and overseas. Know Spanish. Presently on European assignment, available in 60 to 90 days, as project engineer or for other supervisory job, foreign or U.S. PW-4397, Engineering News-Record.

General Superintendent with engineering background, age 54, desires steady employment with reliable firm. Prefer work in main office but not averse to accepting field assignments. Resume upon request. PW-4194, Engineering News-Record.

Controller—Accountant. Top administrator all financial and accounting functions, income tax, insurance. 12 years engineering and construction plus 4 years public accounting experience. Work area N.Y.C. and vicinity. PW-4289, Engineering News-Record.

Supt. or Project Manager available for work in Florida or Georgia. Qualified and experience all phases. PW-3822. Engineering News-Record.

Piledriver, Superintendent or Foreman. Preferably overseas. Will go any place. PW-4388, Engineering News-Record.

Bridge Superintendent—Reg. Engineer—Age 30, 5 years sup. exp.—Estimate, Construct, Manage. Desires position with Western Contractor and opportunity to grow. Resume on Request. PW-4414, Engineering News-Record.

Electrical Construction Superintendent 25 years experience heavy construction. PW-4429, Engineering News-Record.

Structural Engineer, BCE, MCE, Reg. P.E.— N. Y., Age 26, 5 years experience in design and supervision of design, desires position overseas, office or field, in South America or Europe. PW-4427, Engineering News-Record.

Construction manager desires connection with out-of-state contractor planning to do business in Alabama. 30 years experience in field and office, part of this time conducting own business. PW-4365, Engineering News-Record.

Superintendent Brickmason Foreman experience in industrial, commercial and residential construction knowledge of estimating quantity take-off. PW-4354, Engineering News-Record.

Bridge Engineer, M.C.E., P.E., Member A.S.C.E., 25 years experience, 10 years with State Authority as Chief Bridge Engineer in charge of design, specs and construction. Available with short notice. PW-4348, Engineering News-Record.

Draftsman, diversified structural-concrete experience, desires re-locate Washington, D. C., area. PW-4321, Engineering News-Record.

Project Manager-Superintendent, Heavy & bridge construction, 19 years experience. $200. PW-4332, Engineering News-Record.

Graduate Civil Engineer, 24. Experience in Traffic planning studies, some sanitation and light construction. Desire Foreign assignment. PW-4326, Engineering News-Record.

Professional Engineer, wide experience, will prepare Budget Cost Estimates from outline plans and for Spec. for the profession, or Competitive L.S. estimates for Contractors. PW-4493, Engineering News-Record.

POSITIONS WANTED

Structural Engineer, 32, experienced in all types of structures. Desires position in Europe or Latin America. Currently in Spain. Able to supervise in Spanish. J. N. Jaharis, AESB APO 285, N. Y., N. Y.

Superintendent — Engineer — Estimator — Highways—44—BS in CE., PE—Penna—supervision, estimating and layout on Earthwork, Drainage, Structures and Paving. PW-4504, Engineering News-Record.

Project Manager. Field inspection and Supervision. A.M. A.S.C.E. 31 years experience Highways, Turnpikes, Airports. Grading, drainage and pavement design. Preliminary and final estimate computations. Field layout. Above experience as follows: 18 yrs. Penna. Dept. of Highways, 4 yrs. contractor's superintendent on DAA airports, 2 yrs. in charge of water dam, 3 yrs. Penna. Turnpike, 4 yrs. Ohio Turnpike. Have been in charge of supervision and inspection on projects costing up to 20 million dollars each. Available on short notice. Age 54. Detailed resume on request. PW-4479, Engineering News-Record.

Structural Engineer, age 54, sound experience top flight engineering firms, industrial plants, power plants, wharves, docks, bridges, airports, etc. Permanent position good industrial firm wanted. No. East, Mid Atl. area. PW-4481, Engineering News-Record.

Building Construction Estimator. Field background. Available soon. PW-4459, Engineering News-Record.

POSITIONS WANTED

Construction Engineer BCE—9 years experience in building construction, field engineer, assistant superintendent, estimating, and expediting. PW-4464, Engineering News-Record.

Canadian Construction Project Manager. M.E.I.C. P. Eng. 10 years experience, Married, Age 32, have had complete responsibility for completion of 5 million dollars worth of various types of buildings during last 4 years. Full details on request. PW-4498, Engineering News-Record.

Plant Engineer. Desires to make a change to a more comfortable climate. Fifteen years heavy experience in top level positions with outstanding firms. Experience in progress and production control, cost analysis, procurement, estimating, high temperature pressure piping design, thermal expansion problems including furnace manifolds, pressure vessel and flange design, welding and weld tests, sanitary waste disposal design, field liaison, supervision, coordination and drafting room practice. Minimum acceptable salary 10,000 dollars per year. Interested parties may secure a resume by writing on company stationery to PW-4447, Engineering News-Record.

Estimator Building Construction all types and trades available 25 yrs experience prefer location in mid Atlantic or mid west States. PW-4454, Engineering News-Record.

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES — EQUIPMENT USED or RESALE

UNDISPLAYED ———*RATES*——— *DISPLAYED*

$2.10 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

The advertising rate is $23.60 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

Send NEW ADVERTISEMENTS or Inquiries to Class. Adv. Div. of Engineering News-Record, P. O. Box 12, N. Y. 36, N. Y. March 21st issue closes March 11th.

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

SPECIAL SERVICE

Contract Disputes and Public Relations Service offered for Contractors—Owners—Security Companies—Backed by many years experience in construction and negotiation of contracts. SS-4506, Engineering News-Record.

BUSINESS OPPORTUNITY

Private Capital Available for financing contracts, building projects, special situations. Inquiries confidential. BO-4259, Engineering News-Record.

PART TIME WORK WANTED

Estimator—own office—will prepare quantity surveys for Gen'l. Contrs. & Eng'rs. L. Erickson, 359 N. Beach, Ormond Beach, Fla.

Wanted Structural Steel Drafting. Trusses-plate girders-skews. PTWW-4375, Engineering News-Record.

CONTRACT WORK WANTED

Capable Grad, C.E.'s Reg. Surveyors will provide parties and equip. Exp. all types const. CWW-4277, Engineering News-Record.

WORK WANTED

Highway & Bridge—Design, Detailing, Checking & Estimating by group of N. Y. professional engineers. WW-4451, Engineering

Contractors School

NAME .....
ADDRESS .....
CITY .....

Learn how to figure labor, material costs on construction jobs. Write for 30 day free trial. CONTRACTOR'S SCHOOL, Box 12, Dallas, Tex.

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.
GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
P.O. Box 921 Lake Worth, Florida

WANTED—USED EQUIPMENT In Good Condition Only

Semi-automatic concrete batching plant. (300 yards in 8 hours)
35' Office Trailer—Euclid Trucks, 6 to 10 yards—Orange Peel Bucket or Grapple—Cement Storage Bins up to 1,000 bbl. capacity—D-8 or TD-24 Bulldozer—Drag Line Buckets, 2 yd. and 3 yd.
Write P.O. Box 126, Wilmington, Delaware

WANTED
3 Used Bulk CEMENT TRAILERS
100 bbl. or more capacity.
FRED CARLSON CO.
Decorah, Iowa Phone 191

Two-story brick warehouse
For Lease or Sale
34,000 sq. ft. floor space; on lot 27,000 sq. ft. Located down-town Washington, D. C., 60 Florida Ave. N.E. Available July, 1957. Write or phone
RAYMOND BODDIE
P. O. Box 713, Coral Gables, Fla.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
WILSON *Engineering Corp*

COMPRESSOR DIRECTORY

World's Best Rebuilts

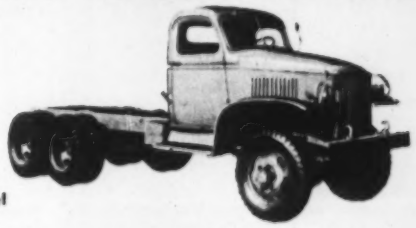
25 CFM 2000 psi Ingersoll Model 3321 New
48 CFM 3500 psi Ingersoll
60 CFM Worth. or Ing. Portable (3)
75 CFM Worth. or Smith Portable (4)
105 CFM Worth. or Ing. Portable (7)
105 CFM LeRoi (diesel) Portable (1)
125 CFM Worth. Portable (3)
137 CFM 100 psi 7 x 7 Ing. ES-1
210 CFM Worth. Portable (3)
277 CFM 100 psi 8⅜ - 4⅜ x 5 CP-PE4
315 CFM Worth. or Jaeger (diesel)
434 CFM Vacuum 14 x 7 Worth.
545 CFM 100 psi Allis Chalmers,
552 CFM 100 psi 13-8 x 12 Ing. XRB
600 CFM Chicago Portable—Rotary
600 CFM Worth. Portable—Reciprocating
660 CFM 100 psi 15-9½ x 12 Worth.
720 CFM Vacuum 18 x 7 Worth. HBV
868 CFM 100 psi 17-10½ x 14 Ing. XRB
868 CFM 100 psi 17-10 x 12 Chicago OCE
1600 CFM 40 psi Fuller Rotary C-300
1721 CFM 100 psi 23-14 x 16 Ing. PRE-2
5748 CFM 50 psi 29-29 x 21 Ing. PRE-1
625 HP—3-60-2300 syn.

American AIR COMPRESSOR CORP.
DELL AVE & 48th ST. NORTH BERGEN, N. J.
Telephone UNion 5-4848

SAVE THOUSANDS!

UNUSED 6x6 ARMY TRUCKS

*2½-TON, GMC & INTERNATIONAL



- From Government Storage!
- Unused and Guaranteed!
- Factory-New Condition!
- Reconditioned trucks also available!

Why invest in expensive new trucks and equipment needed to get the roughest off-road jobs done when you can save up to $3,000 on ONE truck alone—and get the job done right!

Compare our tandem axle trucks with front wheel drive, 10 forward speeds, overdrive and new mud and snow tires with similar equipment elsewhere. See for yourself how TWO of our trucks cost you even LESS than one new truck!

If planning to buy a truck, get in touch with us right away. There's no obligation . . . and we deliver on approval!

For Specifications, Prices, Delivery Write, wire or phone COLLECT—JAckson 5-7841
Milton Y. Toombs, Jr. Sales Manager

MEMPHIS EQUIPMENT CO.

Construction and automotive equipment and parts
766 S. THIRD ST. • MEMPHIS, TENN.

Commission sale of:

Tankers-Tugboats-Barges-Dredges and other Marine Equipment. Write for our catalog—To:

PUBLIC SALES, INC.
P.O. Box #936, Bridgeport, Conn. or
214-56th St., Va. Beach, Va.

RAILS-TIES

TRACK ACCESSORIES
NEW and RELAYING

RAILS — MIDWEST STEEL CORP. — CROSS TIES
CHARLESTON W. VA.
IMMEDIATE DELIVERY

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK
480 Lexington Ave. New York, N. Y.
Park Bldg. Pittsburgh, Pa.
Reno, Nevada
Carnegie, Pa.

RAILS-TIE PLATES

Frogs & Switches—Track Accessories

W. H. DYER CO., INC.
2110-X Railway Exchange Bldg., St. Louis 1, Mo.

RAILROAD Cross and Switch TIES

Promptly from adequate stocks
NEW and USED (as available)
GILLIS & COMPANY
29 East Madison St. Chicago 2

FOR SALE

DIESEL ELECTRIC LOCOMOTIVES

STANDARD GAUGE

25 - 35 - 40 - 50 - 65 - 75 - 100 tons

Write for Details

FRANK M. JUDGE & CO., INC.
7010 Empire State Building
New York 1, N. Y.

Wayne 66 Crawler Backhoe

36" ½ Cu. Yd. Bucket
Waukesha Gasoline Engine $9,995
EHRBAR EQUIPMENT CO.
U.S. Route 22 *Murdock 8-5000* Union, N. J.

FOR SALE or RENT

30 ton Browning Diesel Loco. Crane. 1947.
65 ton Gen. Elec. Diesel Elec. Loco.
10 ton Plymouth Diesel Locos. Std. Ga. 1949.
30 ton Wiley Stiffleg Derrick 80' Bm.
140 HP Amer. 3D. #140 Diesel Hoist & Swinger.
30 ton American #2 Guy Derrick. 90' Bm.
¾ yd. Lima #34 Diesel Crane. 90' Bm.
1½ yd. Northwest #6 Diesel Crane. Built 1949.
1600 ft. Joy Elec. Air Compressor 300 HP. New 1951.
60 ton Manitowoc 3900 Erection Crane. Rent.
100 HP Lucey Portable Boilers. 200# WP.

MISSISSIPPI VALLEY EQUIPMENT CO.
Railway Exchange, St. Louis 1, Mo.

JUST RELEASED GOVT. SURPLUS

TENSIOMETER

TRADE NAME DYNAMOMETER

Measures Traction, Tension, or Weight

A PRECISION INSTRUMENT WHERE QUICK TESTS FOR SAFETY ARE ESSENTIAL.

Mfg. by Dillon Co.
5" DIAL
5½ LBS

Used by: Leading industrial plants, experimental shops, schools, universities, branches of govt.

To determine strengths of: Bondings ● automobile and aircraft frame and cross piece buckling ● chain and cable ● earth anchors ● draw bar testing hydraulics ● clutch loads ● hardware fixtures ● tractor and truck load pulls.

Simple test arrangements: Simply apply winch, block and fall, hydraulics, jack, or turnbuckle.

This is NOT a spring measuring device operates by deflection of special ultrasensitive alloy beam. Registers a full scale reading in pounds with only .040 deflection. Certified by U.S. Bureau of Standards. Portable . . . rugged . . . retains sensitivity indefinitely . . . unaffected by temperature. *[FREE Illustrated Brochure on Request.]*

NEW, FULLY GUARANTEED
10,000 LB TEST
$59.00
GOV'T COST $135.00
Complete with case, illustration of construction, and instructions for uses

[Rated firms shipped open account.]

JOB LOT TRADING CO., Box 352, Church St. Station, N. Y. 8, N. Y.

BATCHING PLANT: 3 compartment Bins 200 ton capacity, 100 bbl. cement compartment, Bucket Elevator, Cement Screw, 1200 bbl. Cement Bin, complete with motors, etc.
OVERHEAD ELECTRIC TRAVELING CRANES: 2—10 ton capacity, 3 motor, 250 volt, D.C., 76'6" span, with or without 700 ft. crane runway.
BRIDGES, Deck Girder Type: 2 Girders each, 44 ft., 54 ft., 65 ft. and 75 ft.
CLAMSHELL BUCKET: Williams 1¼ yd. capacity. Excellent condition.
TRUCK CRANE: Lorain T20 complete with crane boom, shovel front and backhoe.
CRUSHING EQUIPMENT: Jaw Crusher 25 x 40 roller bearing with 36" x 12 ft. Feeder with motor and drive.
JAW CRUSHERS: 4 x 6 to 48 x 60".
GYRATORY and REDUCTION CRUSHERS: All sizes.

We buy and sell equipment throughout North and Central America

A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: MAdison 3-8300 - 3-8301

EUCLID REAR DUMPS
FOR SALE OR RENT

THREE MODEL 27 FD's 15 TON CAPACITY Year: 1946 Cummins 165 H.P. Diesel Engines. Good Condition
ONE MODEL 15 to 22 TON CAPACITY Year: 1949 New G.M. 300 H.P. Diesel Engine. Excellent tires
TWO MODEL 46 TD's 22 TON CAPACITY Year: 1955 Cummins 300 H.P. Diesel Engines. Excellent Condition

L. B. SMITH, INC.
357 West Fayette St. Syracuse, New York
Phone 75-2196

200W BUCYRUS-ERIE
Monighan Diesel Dragline
125 Ft Boom 6-8 Yd
Late Model
Excellent Condition
Catalog on Request

J. A. TERTELING & SONS, INC.
Box 1428 Boise, Idaho Ph: 4-3576

NEW AND REBUILT
STORAGE BATTERY
LOCOMOTIVES
1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Pennsylvania

TRENCHERS

Cleve. 75, 95, 110, 140, 240 & 320.
Buckeye 407, 51, 120, C10, C15 & C224
Parsons 158, 221, 250-2A & 310
P&H 1030 Semi-crawler
Cleve. Pioneer w/pivot Conveyor-Diesel
Buckeye "F" Backfiller
Cleve. Model 80 Backfill Tamper
Barber Greene Runabout
N.W. 80-D Backhoe attachment
N.W. 25 Backhoe attachment
Industrial Brownhoist Model 8 Locomotive Crane—35 ton.
Bucyrus-Erie 10-B Hoe Serial 111000
22-B Any Combination S/N 102674—diesel
4—Model 6 Northwest—Bare—Murphy diesel.

AIR COMPRESSOR RENTAL CO., INC.
19610 Nottingham Rd. Cleveland 10, Ohio

DUMP TRAILERS
ENGINEERED BY STECO

Immediate delivery on capacities from 20 to 50 tons. 150 new and used trailers in stock.

Schuykill Trailer and Equipment Co.
Pottsville, Pa. Market 2-2966
5885

PILING
SURPLUS NEW and USED **For Sale, Wanted or Rent**

P&H 150C ½ CU YD CRAWLER CRANE
Buda Lanova Diesel Engine
Good Condition—$7500.00

EDWARD EHRBAR, INC.
29 Meserole Avenue Brooklyn 22, N. Y.

We do a Nation-Wide business in
STEEL SHEET PILING

IMMEDIATE SHIPMENT
380 pcs. 60 ft Beth. DP-2—New York
292 pcs. 60 to 30 ft. Carn. M-116—Illinois
369 pcs. 60 to 50 ft. Beth. ZP-32—Maryland
490 pcs. 42 ft. Carn. M-116—Louisiana
244 pcs. 35 ft. Carn. M116—Wisconsin
290 pcs. 35 to 15 ft. Beth. AP-3—Ohio
190 pcs. 25 ft. Beth. DP-2—Massachusetts
Other Lengths & Sections at Various Locations

PILE DRIVING EQUIPMENT
Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Hoists and Boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

RENT STEEL SHEET PILING

Get the exact lengths and sections you need of all standard sections, delivered *on time*—and at Foster's usual low rental rates

H-BEARING PILE
PIPE FOR PILING
LIGHT-WEIGHT STEEL PILING
PILE HAMMERS & EXTRACTORS

L.B. FOSTER Co.
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

Sales—GENERATORS—Rentals
*100 KW G. M. 3/60/120/208 + Diesel
75 KW G. M. 3/60/120/208 + Diesel
60 KW G. M. 3/60/127/220 + Diesel
25 KW I-H 3/60/120/208 + Diesel
*75 KW Wauk. 3/60/120/208 + Gasoline
35 KW Onan 3/60/120/208 Gasoline
New + 440 volt

DIESEL MOTORS CO.
Rte. 25, Middle Island, LINY YAphank 4-6500

FOR SALE
DIESEL LOCOMOTIVE CRANE
BROWNING MODEL C-1
Capacity 25-ton. 55 Ft. Boom. D-13000 Engine. Air Operated. Not a conversion.

WEAVER CRANE SALES COMPANY
432 East 152nd Street Cleveland 10, Ohio
Phone KENMORE 1-2242

STEEL SHEET PILING
780 PCS. LARSSEN 11—30' & 40'
294 PCS. BETH. AP-3—20'

PILE HAMMERS & EXTRACTORS
I McKIERNAN TERRY E4 EXTRACTOR
VULCAN 800 EXTR.—McK. T. 983 HAMMER
STOCKS—NEW ORLEANS—TAMPA—JACKSONVILLE

SEABOARD STEEL CORP.
4521 South Tamiami Trail, Sarasota, Florida
Tele. Ringling 7-0461

FOR SALE
PARSONS 310 TRENCHER
With Cat engine, cuts 24" to 78" wide by 18 ft. deep, like new, cut less than 5000 ft. of trench. Bargain.

E. A. MEYER CONSTRUCTION CO.
1539 Morrow Ave., North Chicago, Ill.

STEEL SHEET PILING

AVAILABLE FOR PROMPT SHIPMENT

Pcs.	Section	Length	Location
94	MP-116	34 to 35 ft.	Wisconsin
101	MP-116	15 to 20 ft.	Iowa
75	MP-116	60 ft.	Chicago
110	MP-115	35 to 60 ft.	Kansas City
130	MP-116	35 to 45 ft.	Alabama
36	MP-115	60 ft.	Nebraska
175	MP-116	35 to 60 ft.	Kansas City

CONMACO PHONE DRexel 1-3930
CONTRACTORS MACHINERY COMPANY
804 KANSAS AVE., KANSAS CITY, KANSAS

When you need
PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

BUSINESS FOR SALE
Well established Soil and Rock Exploration business is offered for sale. This includes all equipment necessary for operation. If interested and want detailed information, call Independence 3-5000 before 5 P.M. and after: Myrtle 2-6814. Ask for Mr. Silveri, or write.

SILVERI DRILLING COMPANY
Box 177 Cold Spring Harbor, L. I., New York

STEEL SHEET PILING
486 PCS. BETH. ZP-32—32'-40' & 60'
826 PCS. CARNEGIE M116—25' & 30'
418 PCS. BETH. DP-2—40' & 60'
397 PCS. BETH. AP-3—21', 25' & 30'
WANT TO BUY ALL SECTIONS

R. C. STANHOPE, INC.
60 E. 42nd St., N. Y. 17, N. Y.

Heavy Duty Electric
POWER CABLE
Tremendous Inventory
Low, low Prices — CALL COLLECT!
COLEMAN CABLE & WIRE COMPANY
Dept. AC Schiller Pk. Ill. NAtional 5-6215

DON'T WAIT
WF-H BEAMS
PILE SECTIONS
NEW · USED · IN STOCK

8"	BP	36#
10"	BP	42#
12"	BP	53#
14"	BP	73#
14"	BP	89#
14"	BP	102#
14"	BP	117#

We are also interested in purchasing your surplus material.

We assure you our prices will be the best obtainable.

Call HY DRACHMAN
STEEL CORPORATION
52-25 2nd Street
Long Island City, N. Y.
Phone: RAvenswood 9-1262

FORSYTHE EQUIPMENT CO., INC.
MANITOWOC SPEEDCRANES
RENTALS

Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs.
Special rates on long rentals

Exeter 2-6125 37-11 Vernon Blvd.
Long Island City 1, New York

PIPE
Surplus New & Used
FOR SALE

PILING PILE FITTINGS · PIPE
CULVERTS · VALVES & FITTINGS
SPECIALISTS IN PRE-FAB. PIPING

ALBERT
PIPE SUPPLY CO., INC.
Berry at North 13 Sts., B'klyn, N. Y.

ALBERT PIPE SUPPLY

PIPE
VALVES and FITTINGS
All Sizes in Stock
NEW—USED
GREENPOINT IRON & PIPE CO. INC
Bogart and Stagg Streets Brooklyn, N.Y.

FOR SALE
NEW FOUNDATION PIPE PILING
Excess from foundation job. 12¾" O.D. x .188 in 60' lengths.

A. S. WIKSTROM, INC.
Skaneateles, N. Y.

FOR SALE OR RENT

1—Model E Wiley Stiffleg Derrick with 60' boom, 30' mast. Rated 25-ton @ 38' radius.

1—20-ton Model 836 American Steel Stiffleg Derrick #195016, 50' boom, 12' bullwheel. Rated 26,000# @ 48'.

1—American Terry Model 1-75 Steel Erectors Guy Derrick, 85' mast, 75' boom. Rated 15-ton @ 30' radius.

1—Industrial Brownhoist Model L Steam Locomotive Crane, Serial #5049. 110' boom. 40-50 ton capacity. Priced for quick sale.

1—Ferguson "112" double-roll Sheepsfoot Roller. Dia. of rolls 40", width 48", 112" per section. Weight empty 6,340#. Weight with ballast 10,200#.

1—Tampo Pneumatic-Tired Roller Model R13, with 13 pneumatic tires, size 7.50x15. Rolling width 84". Weight empty 3500#. Weight with ballast 28,000#.

2—Tandem Rollers: 1 Austin Western 5-8 ton variable weight, diesel powered, hydraulic steering. Thoroughly rebuilt. 1 Buffalo-Springfield 8-ton, gas. powered, mechanical steering. Good operating condition.

2—Buckeye Mdl 12 Trenchers: 1 diesel powered; 1 gasoline powered. Max. digging width 24", depth 5½'. Thoroughly rebuilt.

2—#1 Vulcan Hammers with standard base

5—#2 Vulcan Hammers: 2 with McDermid base 3 with standard base

McKiernan-Terry Hammers: 11B3, 10B3, 9B3, 9B2, 7, 6, 5, 3 and 1.

17—Portable Compressors 105 CFM to 500 CFM to be sold at sacrifice! Call Mr. Kern at PITTSBURGH for special prices.

Write for New Stock List No. 456

Equipment Corporation of America

CLIFTON HEIGHTS, PA., Box J-608, Sub of Phila. MAdison 6-2200
GRIVETON, PA., Box 43-J, Sub. of Pittsb. FEderal 1-2000
CHICAGO 4, ILL., 327-J So. La Salle St. WAbash 2-4661
NEW YORK 7, N. Y. 30-J Church St. WOrth 2-0036

CRANES FOR RENT

CRAWLERS — Capacities to 80 tons, Booms to 180 ft.
TRUCK CRANES — Capacities to 85 tons, Booms to 180 ft.

P and H. Lima and Manitowoc.
Top-Condition erection cranes

ROGER SHERMAN
CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4106

LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM OR DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT or BUY

FOR DAMS, BRIDGES, BREAKWATERS, FILTRATION AND BEVERAGE PLANTS

FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE NEW YORK

EUCLID LOADER
BV-3-17 Powered with Cummins Diesel Engine. Completely rebuilt and in excellent condition. FOB Odenton Maryland $10,000.00.

EUCLID-TENNESSEE, INC.
720 Murfreesboro Rd. Nashville, Tenn.
Tel. ALpine 6-1648

FOR SALE OR RENT
STATIONARY MIXERS
4—28-S Ransome & Knickerbocker stationary mixers. Gasoline or electric powered. Complete accessories. Open-end skip or batch hoppers.

THOMAS HOIST CO.
20 S. Hoyne Ave. Chicago 12, Ill.

FOR SALE

DRAGLINES AND CRANES

1201 Lima Dragline, 85', 3 yard
955 P&H Dragline, 90', 2½ yard
54-B Bucyrus Erie Drag, 85', 2½ yard
1001 Lima Dragline, 80', 2½ yard
802 Lima Cranes
3000-B Manitowoc Cranes

SHOVELS AND COMBINATIONS

1201 Lima Comb. Shovel-Crane
54-B Comb. Dragline-Crane
54-B Comb. Shovel-Dragline
25 Northwest Comb. Shovel-Drag
80-D Northwest 2½ yd. Shovel
44 Lima 1 yard Backhoe
LS-85 Link Belt 1 yard Shovel
320 General ¾ yard Shovel
34 Lima ¾ yard Shovel
22-B Bucyrus Erie Backhoe
Unit 1020 ¾ yd. Shovel—1 yr. old

TRUCK CRANES, EUCLIDS, DRILLS, etc.

Bay City, Lorain, P&H, & Osgood Truck Cranes
Euclid Trucks—27FD, 18FD, 8TD, 36FD, 82FD, 13TD, 14TD, 63TD
600 Reich Heavy Truck Mounted Rotary Air Drills
58-BH Joy Champion Rotary Air Drills
42-T, 29-T & 27-T Well Drills
Davey Rotary Truck Air Drills
Mayhew Rotary Truck Air Drills
Portadrill Truck Mounted Air Drill
Garwood, LeTourneau, Caterpillar, Euclid & Bucyrus Erie Scrapers
Huber 3-5 ton Tandem Roller
Buffalo-Springfield 10 ton Roller
International Bulldozers
Caterpillar & Allis Chalmers Dozers, Front End Loaders, Graders, Carryalls
Shovel, Drag, Crane & Backhoe Attach. —Drag & Dipper Buckets for most makes and models

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

8½ YD. SMITH
TRUCK MIXER
Used as Demonstrator for short time.
Excellent Condition.
Hodge & Hammond, Inc.
720 Garrison Avenue, Bronx, N. Y. C.
New York Phone—Kilpatrick 2-2400
New Jersey Phone—Market 3-5424

CONSTRUCTION EQUIPMENT

QUICKWAY MODEL "E" TRUCK CRANE

WITH 35 FT. BOOM,
29" MAGNET AND GENERATOR

$8500.00

SERVICE SUPPLY CORP.

PROFESSIONAL SERVICES

NEW ENGLAND

Jackson & Moreland, Inc.
Engineers and Consultants

Design and Supervision of Construction
Reports — Examinations — Appraisals
Machine Design—Technical Publications
Boston — New York

Metcalf & Eddy
ENGINEERS

Investigations — Reports — Design
Supervision of Construction and Operation
Management — Valuation — Laboratory
1300 Statler Building, Boston 16

MIDDLE ATLANTIC

Fort Lee Construction Co.
Engineers and Constructors

For modern, efficient, design and erection, commercial and industrial, reinforced concrete, structural steel and timber. Complete projects, from inception to completion, based on 25 years continuous successful experience.

Main office 248 Main street, Fort Lee, New Jersey. Telephone Windsor 4-7864.

Edwards, Kelcey & Beck
Consulting Engineers

Reports, Design Supervision
Subways, Expressways, Traffic, Parking
Harbor Works, Bridges, Tunnels
Housing and Industrial Developments
Newark, New Jersey
New York — Philadelphia — Boston

John Clarkeson
Consulting Engineer

Civil Engineers — Consulting Services

Highways, Airports, Bridges
Surveys, Waterfront Facilities

Albany and Watertown, N. Y.

E. Lionel Pavlo
Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
7 E. 47th St. — New York 17, N. Y.

D. B. Steinman
Consulting Engineer

BRIDGES
HIGHWAYS
Design, Construction
Strengthening, Investigations,
Reports, Advisory Service
117 Liberty St., New York 6, N. Y.

Severud-Elstad-Krueger
Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures
415 Lexington Avenue
New York 17, N. Y.

Lockwood, Kessler & Bartlett, Inc.
Engineers — *Surveyors*

Civil Engineering Investigations, Reports and Designs, Supervision of Construction, Cadastral, Geodetic, Topographic & Engineering Surveys, Photogrammetric Engineering and Mapping.
One Aerial Way — Syosset, N. Y.

Kain and Hooven
Consulting Engineers

Civil—Structural—Industrial

Registered—Pennsylvania, Delaware, New Jersey
44 S. Lansdowne Ave., Lansdowne, Pa.

Robert W. Lowry, Inc.
Consulting Engineers

Robert W. Lowry — M. Lepkaluk
Design, Supervision, Reports, Long Span & Movable Bridges, Expressways, Highways, Airports, Prestress Design, Stress Analysis & Strengthening
227 Pine Street, Harrisburg, Pa.
122 E. 42nd Street, N. Y., N. Y.

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.: Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Buchart Engineering Corp.
Engineers

Highways — Bridges — Toll Roads
Sewerage — Industrial Waste and Disposal — Water Works — Surveys — Reports — Design — Supervision — Consultation — Industrial — Municipal — Structures
611 W. Market St., York, Pennsylvania

Sprague & Henwood, Inc.
Drilling Services

Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling

Main Office
221 W. Olive Street, Scranton, Pa.

Branches:
1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St., New York, New York
200 Magee Bldg., Pittsburgh, Pa.
1248 Church St., Decatur, Ga.
Box 645—Grand Junction, Colorado
Buchans, Newfoundland

SOUTH

Harry Hendon and Associates
ENGINEERS
(Formerly Polk, Powell and Hendon)

Harry H. Hendon — L. E. Hoffmann
A. B. Jowers
Civil Engineers—Public Utilities
10 Office Park Circle, Mountain Brook
Birmingham 9, Alabama

Duval Engineering & Contracting Co.
General Contractors

FOUNDATION BORINGS
For Engineers and Architects.
Jacksonville — Florida

Rader and Associates
Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations.
111 N.E. 2nd Avenue, Miami 32, Fla.

MIDDLE WEST

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
360 East Grand Ave., Chicago 11, Ill.

Mobile Drilling & Engineering Inc.
Foundation Engineering & Testing

Division—Contract Drilling Division
Foundation Investigation, Analysis & Design—Earth Dam & Embankment Design—Pavement Design—Compaction Control—Soil Sampling & Testing—Core Drilling.
960 N. Penn. Ave., Indianapolis 4, Ind.

Toledo Testing Laboratory
Engineers—Chemists

Concrete — Soils — Asphalt
Inspection — Research
Tests — Development
Foundation Investigation
Borings — Diamond Drilling — Load Tests
Soils Mechanics Laboratory
1810 North 12th St. — Toledo 2, Ohio

GEOLOGISTS

Geologic Associates
ENGINEERING GEOLOGISTS

Studies and Reports
Foundation Investigations
Specialized Drilling and Sampling
1500 8th Ave. So — Nashville, Tenn.
9-1518 — Phones — 5-4402

INSPECTION & TEST

A. W. Williams Inspection Co.

Established 1921—Member A.C.I.L. Inspection — Testing — Analyses — Supervision. Foundation Investigations, Soil Borings, Soil Mechanics, Concrete and Asphalt Design and Control, Radiography, Sampling, Calibrations, Timber and timber treatment inspections, Complete testing laboratory service.
Main Office: 308 Virginia St., Mobile, Ala.

Richardson X-Ray Service
a corporation

Field X-ray, Gamma ray Inspection of Penstocks, Pipelines and related welded structures.

World Wide Service

617 S. Raymond Ave. Alhambra, Calif. Cu 3-1167

The Haller Testing Laboratories, Inc.

140 Cedar St., N. Y. 6, N. Y.

Testing and Inspection of Construction Materials for:
Expressways—Airports
Structures—Bridges

Complete Soils Laboratory

Test Borings—Load Tests

New York, N. Y. — Boston, Mass.
Plainfield, N. J. — New Haven, Conn.

SEARCHLIGHT SECTION

(Continued from preceding page)

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

TRANSITS AND LEVELS

New or Rebuilt Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in *trade*.

A complete line of Engineering Instruments and equipment for field or office. Write for Catalog NRL 73.

WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

TRANSITS & LEVELS
Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

INSTRUMENTS RENTED

Midwest Representatives: W. & L. E. Gurley, Distributors—Filotecnica Salmoiraghi

NATIONAL BLUE PRINT CO.
Established 1911
210 S. Canal St. — Chicago (6), Ill.

ALL MAKES

REBUILT REPAIRS RENT REAL EXPERTS

BUFF

69 Day St., New York WOrth 2-2787

SPECIALIZED REBUILDING
of surveying and engineering instruments.
All makes and models expertly repaired in modern shop. All work guaranteed.
Distributors for Brunson Instruments
Hickerson Instrument Co.
2 North Edmondson Avenue, Indianapolis 19, Indiana

ADVERTISERS IN THIS ISSUE

Acker Drill Co. ... 119
Allied Materials Corp. ... 145
Allis Chalmers Mfg. Co. (Tractor Div.) ... 109
Aluminum Company of America ... 132
Amer. Bridge Div., U. S. Steel Corp. ... 112, 113
American Marietta ... 110
American Sisalkraft Corp. ... 100
American Steel & Wire Div., U. S. Steel Corp. ... 14, 15
American Vitrified Prod. Corp. ... 35
Armco Drainage & Metal Prod. Co. ... 73
Armstrong Cork Co. ... 49
Asphalt Institute ... 36, 37
Associated Steel Corp. ... 102
Atlas Powder Co. ... 90

Baldwin Lima Hamilton Corp., Lima Div. ... 96
Barber Greene Co. ... 84
Barco Mfg. Co. ... 123
Belmont Iron Works ... 92
Bethlehem Steel Corp. ... 65
Blaw Knox Co., Constr. Equip. Div. ... 142, 143
Bruning Co., Chas. ... 105
Buffalo Springfield Roller Co. ... 149
Butler Bin Co. ... 72
Butler Mfg. Co. ... 129
Byers Co., A. M. ... 2nd Cover

Case Foundation Co. ... 96
Caterpillar Tractor Co. ... 30, 31
Chain Belt Co. ... 50, 51
Clipper Co. ... 17

Detroit Diesel Engine Div., G M C. ... 82, 83
Dorr Oliver Co. ... 66
Dow Chem. Corp. ... 107
Dresser Mfg. Div., Dresser Ind. ... 67
Dudgeon, Inc., Richard ... 86

Economy Bldg. Inc. ... 101
Economy Forms Corp. ... 88
Euclid Div., G M C. ... 4, 5, 13

Ford Motor Co., Industrial Engine Div. ... 115
Tractor & Implement Div., Ford Motor Co. ... 98, 99

Garrett Corp. ... 95
General Motors Corp., Truck Div. ... 68, 69
Globe Co. ... 76
Goodyear Tire & Rubber Co. ... 1
Griffin Wellpoint Corp. ... 12
Gunite Concrete & Construction Corp. ... 92

Harnischfeger Corp. ... 138, 139
Hartford Fire Ins. Co. ... 63
Hendrix Mfg. Co. ... 70
Hyatt Bearing Div., G M C. ... 20

Illinois State Highway Toll Comm. ... 119
International Harvester Co. ... 6, 7, 8, 10, 11
Irving Subway Grating Co. ... 74

Jackson Vibrators ... 55
Jaeger Machine Co. ... 57
Jenkins Bros. ... 18
Jersey Bolt & Spike Co. ... 104
Johnson Co. ... 147

Keasbey & Mattison Co. ... 97
Kinnear Mfg. Co. ... 106

Koehring Co. ... 146, 147
K S M Prod., Inc. ... 102
Kwik Mix ... 147

Larsen Prod. Corp. ... 86
LeRoi Div., Westinghouse Air Brake Co. ... 125
LeTourneau Westinghouse Co. ... 75, 77, 117, 118
Lincoln Elect. Corp. ... 93
Littleford Bros. ... 114

Madesco Tackle Block Co. ... 101
Mall Tool Div., Remington Arms Co. ... 137
Marietta Concrete Corp. ... 9
Marion Power Shovel Co. ... 87
Master Builders Co. ... 3rd Cover
McGraw-Hill Book Co. ... 62
McKiernan Terry Corp. ... 88
McKinney Drilling Co. ... 86
Meadows Inc., W. R. ... 38
Miller Elect. Mfg. Co. ... 104
Momar Ind. ... 85
Mueller Co. ... 16

National Gypsum Co. ... 103
National Supply Co. ... 80
Naylor Pipe Co. ... 131
Northwest Engr. Co. ... 3

D. W. Onan & Sons, Inc. ... 78

Parsons Co. ... 147
Patent Scaffolding Co. ... 60
Pennsylvania Drilling Co. ... 88
Phoenix Bridge Co. ... 101
Presstite Keystone Engr. Co. ... 34
Prime Mover Co. ... 130

Raymond Concrete Pile Co. ... 32
Remington Arms Co., Ind. Tool Div. ... 79
Republic Steel Corp. ... 58, 59
Reynolds Metal Co., Inc. ... 121
Rockford Clutch Div., Borg Warner Corp. ... 124
Russell Burdsall & Ward Bolt & Nut Co. ... 89
Ryerson & Sons, Jos. ... 106

Sauerman Bros., Inc. ... 64
Shawnee Mfg. Co., Inc. ... 135
Shlagro Steel Prod. Corp. ... 56
Sonneborn & Sons, Inc. ... 47
Steelcraft Mfg. Co. ... 33
Sturdevant Co., P. A. ... 85
Symons Clamp & Mfg. Co. ... 2

Texas Co. ... 4th Cover
Timber Structures Inc. ... 94
Timkin Roller Bearing Co. ... 140
Tractor Spreader Co. ... 52

U. S. Rubber Co. ... 22
U. S. Steel Corp. ... 42, 43

Wild Heerbrugg Instruments, Inc. ... 92

Youngstown Sheet & Tube Co. ... 126

Professional Services ... 162

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities ... 154-158
Proposals ... 151-153
Educational ... 158
Equipment (For Rent, Sales Wanted) ... 158-162
Wanted ... 158

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABC Member

Number of copies of this issue printed 76,389

D. S. ROBERTSON, Advertising Manager
D. J. CASSIDY, Business Manager

ADVERTISING REPRESENTATIVES

New York 36—330 W. 42 St.,
C. D. Neulen, H. T. Olsen
J. C. White

Chicago, 11—520 No. Michigan Ave.,
L. H. Hunt, W. G. Payne
J. A. Shipley

San Francisco, 4—68 Post St.,
I. W. Otterson, R. C. Alcorn

Philadelphia, 3—17th and Sansome Sts.,
D. G. Jensen, D. L. Kates

Cleveland, 15—Hanna Bldg.,
F. P. DiToro, E. B. Mingle Jr.

Detroit, 26—Penobscot Bldg.,
J. A. Houghton

St. Louis, 8—Continental Bldg.,
B. F. Horn

Los Angeles, 17—1125 W. Sixth St.,
H. L. Keeler

Atlanta, 3—Rhodes-Haverty Bldg.,
D. C. Billian

Dallas, 1—Vaughn Bldg., 1712 Commerce St.,
G. Jones

Pittsburgh, 22—919 Oliver Bldg.,
M. Russell

OTHER SALES OFFICES:

Boston, 16—350 Park Square Bldg.,
London, McGraw-Hill House

How to keep informed on the "with what" part of your business

AT YOUR FINGER TIPS, issue after issue, is one of your richest veins of job information—advertising. You might call it the "with what" type—which dovetails the "how" of the editorial pages. Easy to read, talking your language, geared specifically to the betterment of your business, this is the kind of practical data which may well help you do a job quicker, better—save your company money.

Each advertiser is obviously doing his level best to give you helpful information. By showing, through the advertising pages, how his product or service can benefit *you* and *your* company, he is taking *his* most efficient way toward a sale.

Add up all the advertisers and you've got a gold mine of current, on-the-job information. Yours for the reading are a wealth of data and facts on the very latest in products, services, tools . . . product developments, materials, processes, methods.

You, too, have a big stake in the advertising pages. Read them regularly, carefully to keep job-informed on the "with what" part of your business.

McGRAW-HILL PUBLICATIONS

Editorials

Watch Out for False Economy

PUBLIC WORKS form a tempting target this year to an economy-minded Congress that has promised to pare the record peacetime budget. With huge sums requested for defense and foreign aid, it seems easier to cut down expenditures for civil works than other portions of the budget—especially when some economists argue that public works should be held back in times of prosperity to be saved for bad times. However, curtailment of public works may be false economy.

A sound public works program is at all times essential to the public welfare. Such a program requires first, that expenditure of federal funds for every project be justified; secondly, that planning be continuous and foresighted, to assure an ample supply of completed plans on the shelf for use when needed; thirdly, that when a project is needed authorizations and appropriations be promptly voted; and finally, funds should be supplied continuously to all projects that have been started to keep them moving at an optimum pace.

A sound program is not possible—and the economy suffers—when authorizations and appropriations for essential public works are withheld. For almost never is a project constructed when the need is first established, but nearly always long after. It takes time to draw up plans, to obtain Congressional approval, to award contracts and to start work, and frequently, the construction period is long, so that many years elapse before the project begins to function. Hence, deferment of an essential project may have distressing effects on the national economy. In fact, the nation may suffer more from postponement of some projects than from any inflationary effects attributable to their construction.

On the other hand, expenditure of federal funds cannot be justified for all projects in the proposed bills. Out of a total budget of $73.1 billion proposed by the Administration for fiscal 1958, $6.3 billion is allocated for public works. Of this amount, some $4 billion is for civil public works. Included among these projects are some of questionable economic justification, and others equally questionable may be added before the legislation comes up for a vote. Some, perhaps, are projects that should be handled at state or local levels. These and the unsound projects should be culled before passage of any authorizing legislation.

It should be recalled that last year President Eisenhower vetoed a rivers and harbors authorization bill because it contained some projects for which economic justification had not been established (ENR Aug. 16, 1956, p. 22). While no delay in construction starts was caused by the veto, since no appropriations had been voted at that time anyway, failure to approve both authorizations and appropriations this year will hold up vital projects.

Congress undoubtedly will screen carefully the projects in the public works bills to lessen risk of another veto. But if Congress should decide to economize by curtailing badly needed public works, it should do so only with the certain knowledge that reductions in other portions of the federal budget will be more injurious to the public welfare. Otherwise, the savings will be false economy.

Tree Rings and Rainfall

IT IS TRUE, we are told, that rainfall, rainfall cycles and weather generally, all leave their record in the annual growth of trees—at least in certain trees—and that much information can be obtained from laboratory study of the growth rings. To clarify fundamentals of this young science of dendochronology and to present the situation today, free from sensationalism, which has tended to distort the picture, Nathan A. Bowers, former staff member and now a consulting editor of ENGINEERING NEWS-RECORD, asked to write the article on p. 53 of this issue.

Dendochronologist Bowers reports that for rainfall study the science of tree-ring analysis thus far has been developed only to a limited extent. More work must be done before data are available and classified in the comprehensive form needed to support the positive findings desired. Meantime, the value of data on the annual water crop to be expected from watersheds is steadily increasing, especially in the West, where population growth is rapid in areas whose rainfall records go back relatively few years. Since tree rings offer the possibility of shedding light on events antedating man-kept records, this source of information deserves thorough exploration.

Markers for Interstate Highways

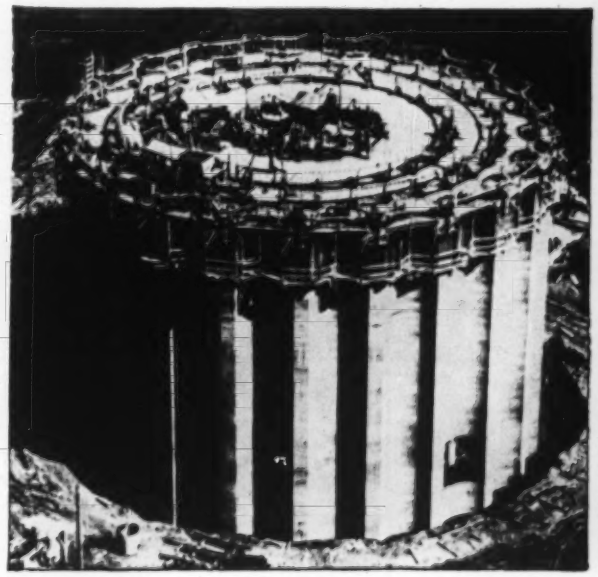
USE OF DISTINCTIVE MARKERS on completed sections of the interstate highway net was proposed at the recent meeting of state highway officials in Atlantic City (ENR Dec. 6, 1956, p. 70). The idea has appeal as a means for identifying highways on which the public can expect to find freedom from traffic lights, from grade crossings or blind side roads and from other hazards.

However, in the further study that the state highway departments plan to make of this proposal, the possibility of further confusing highway users by adding still another type of sign to the current multiplicity of road markers should not be overlooked. Any driver whose travel takes him beyond the familiar signs of his own state can easily become confused by the variety of highway signs that he encounters. What is most needed is not another type of sign, but less variety.

Under these conditions, the two main questions that should be answered in a study of distinctive signs for the interstate system are these: (1) Can all 48 states be brought into agreement on a uniform sign for that system? (2) Will such a sign be a real help to drivers using the new highway? If both can be answered affirmatively, the proposal has merit.

LARGEST TANK OF ITS TYPE...

City of Dallas, Texas 2,000,000-gallon prestressed concrete water tank. Supported on reinforced concrete slab resting on four concentric ring walls. Substructure walls built simultaneously with slip forms using hydraulic jack system. Pozzolith employed in the concrete. Design: The Preload Co., Inc., New York City; Prime Contractor: Whittle Construction Co., Dallas. Sub-contractor for prestressing: Preload Construction Corp.



Left: View of the four tower cylinders under construction, with slip-form platform at top.

Right: Wire-winding machine wraps finished tank in pre-stressing operation.

POZZOLITH employed to obtain top results in Slip-Form Concrete

This giant water tank is one of many slip-form projects in which Pozzolith was used because it provides three controls required for optimum concrete performance in this type of construction. These controls are:

1. Lowest possible unit water content, with controlled placing consistency...for dense, segregation-free concrete.
2. Control of entrained air...for designed strength with required durability.
3. Control of rate of hardening . . . for desired handling and finishing time under widely varying job conditions.

An illustrated bulletin that describes how Pozzolith was an aid in improving the control of concrete quality on slip-form work is available. Copy sent on request.

Whatever the type of construction, Pozzolith will give you superior concrete performance. May we demonstrate?

ENGINEERS and ARCHITECTS employ POZZOLITH with confidence

★ *proved performance* . . . 138 million cubic yards of concrete produced with Pozzolith for all types of jobs.

★ *applied know-how* . . . more than 100 skilled Master Builder's field men for product-use consultation.

★ *available everywhere* . . . over 1000 ready-mix and job-site plants now producing concrete with Pozzolith.

The MASTER BUILDERS Co.

Division of American-Marietta Company

Modernizing another 40 miles of US Route 1

The conversion of US Route 1 south of Jacksonville into a divided highway has been one of Florida's major, long-range projects. Most recent developments in this program have been the dualization of 20 miles of US-1 between Jacksonville and St. Augustine and of a similar mileage near Titusville. In both instances, the pavement constructed on these sections of the nation's principal north-south traffic artery was heavy-duty, hot-mix Texaco Asphaltic Concrete.

The same rugged plant-mixed type of Texaco Asphalt pavement has been laid on 30 miles of the Massachusetts Turnpike. It will also be constructed on a substantial portion of the Connecticut Turnpike.

On the basis of durability, riding quality and cost, hot-mix Texaco Asphaltic Concrete paving is a logical choice for the Interstate Highway System.

Helpful information on Texaco Asphaltic Concrete, as well as other heavy-duty, intermediate and low-cost types of Asphalt construction, is supplied in two booklets, copies of which may be secured with no obligation by writing our nearest office.

Photos show hot-mix Texaco Asphaltic Concrete pavement under construction and completed on 20-mile section of US Route 1 between Jacksonville and St. Augustine, Fla. now a divided highway.

CONTRACTORS: Marion Construction Company, Ocala, Fla. Jacksonville-St. Augustine project); Macasphalt Corporation, Lakeland, Fla. (Titusville project.)

ENGINEERING RESEARCH EDUCATION THE ASPHALT INSTITUTE

MEMBER

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Minneapolis 3 Philadelphia 2 Richmond 19

TEXACO

TEXACO ASPHALT